THE IRON AGE

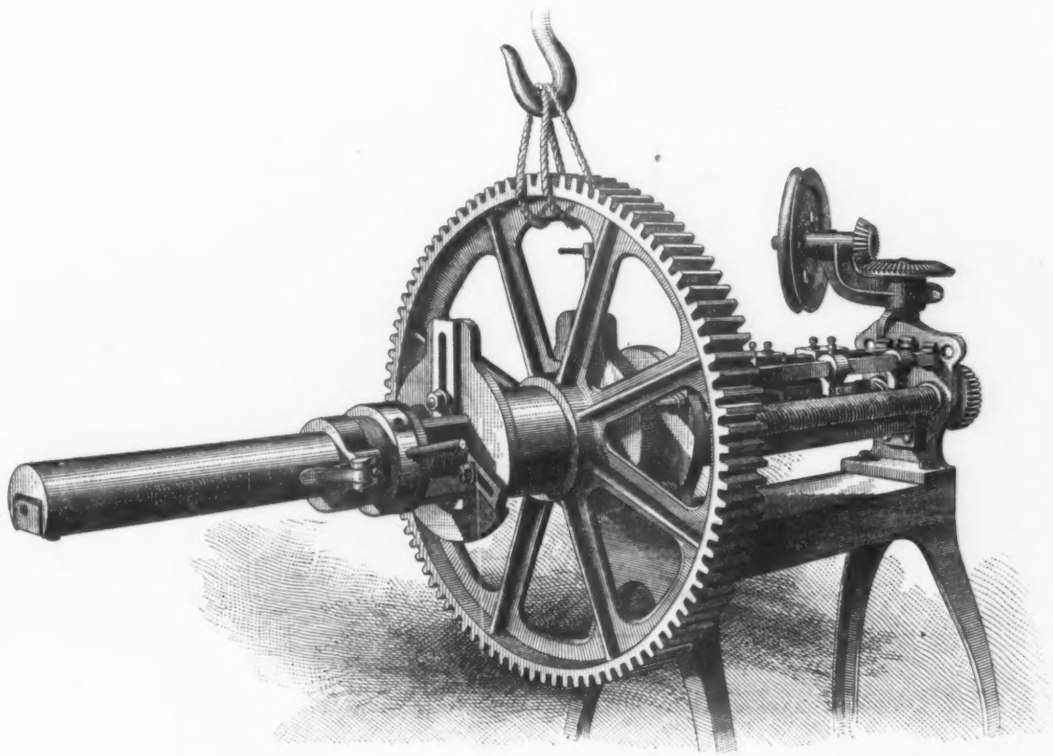
THURSDAY, JULY 18, 1889.

The Erie Key-Seating Machine.

In this machine the arbors are made of steel. The small one is $2\frac{7}{16}$ inches in diameter, and is supplied with eccentric taper bushings to accommodate it to all bores up to $4\frac{7}{16}$ inches. The arbor is hollow and has within it a guide-bar, which is also steel and is movable up and down by means of a screw at each end. It is planed out through its entire length the necessary size and shape to carry within it a tool-bar. This steel tool-bar carries two tools of the width desired for the key-seat. It is connected to the driving-carriage by means of a removable pin, and is driven back and forth through the guide-bar, cutting in both directions, and fed in opposite directions. Between them is an open-sided nut, which slides from one to the other within a carriage. The nut engages in one screw and travels the desired distance, when it comes in contact with a cam, which throws it out of gear, and by a spring it is pushed in gear with the other screw. The nut has on its top two ribs, one of which, by passing behind a guide, holds it in gear. The other serves to receive the pressure of the spring. By shifting the cams and springs any desired length of stroke can be made. The traveling of the nut carries with it a carriage, to which the cutting-bar is attached. The screws are driven by cut gears running smoothly and giving a very strong motion to the cutter-bar.

Opening San Domingo to American Commerce.

H. C. C. Astwood, who has held the position of United States Consul in San Domingo for the last eight years, in a recent interview gives much interesting information respecting American enterprise in that republic and encourages the expectation of important commercial developments when certain railways now being constructed are finished. After speaking of the extraordinary natural resources of the country and its sparse population, numbering not over 400,000, Mr. Astwood remarks that there is a great tendency to Americanize the country. The President is very solicitous to have Americans come



THE ERIE KEY-SEATING MACHINE, MADE BY F. C. BURTON & CO.

down the desired depth and taper by the screws at the ends.

The second arbor is $4\frac{7}{16}$ inches in diameter and is constructed the same as the first, but in place of using the taper bushings to bring it in position in the bore, the arbor-head or flange is made a three-jaw chuck, and indexed to suit different bores, so the jaws can be adjusted as desired. For the other end of the hub a movable chuck is supplied. Both the arbors are supplied with a clamping device. On each side of the arbor are cut ratchet teeth, and a collar, with loose ratchet pieces, is slipped on the arbor—the pieces dropping into the teeth. By pushing the collar against the hub and turning a nut the work is held firmly in position. It will be seen by the foregoing description that the bore is the guide by which the machine is set; therefore no facing of the hub is required.

The driving apparatus consists of two parallel screws of $2\frac{1}{2}$ inches in diameter, $1\frac{1}{2}$-inch pitch, three threads. They are set 6 inches from center to center and run

The range of the standard machine is in all bores, from $2\frac{7}{16}$ inches in diameter up to 12 inches; all widths of seats up to $2\frac{1}{2}$ inches; length of cut, 24 inches. If the work is heavy and too large to be placed on the machine it can be used as a portable machine. The cutting is done by both forward and backward stroke, and as the cutters are hung on pins they will drag back through the cut without having to be backed away from the work. As the tool-bar is supported its entire length there can be no perceptible spring. This machine is made by F. C. Burton & Co., of Erie, Pa.

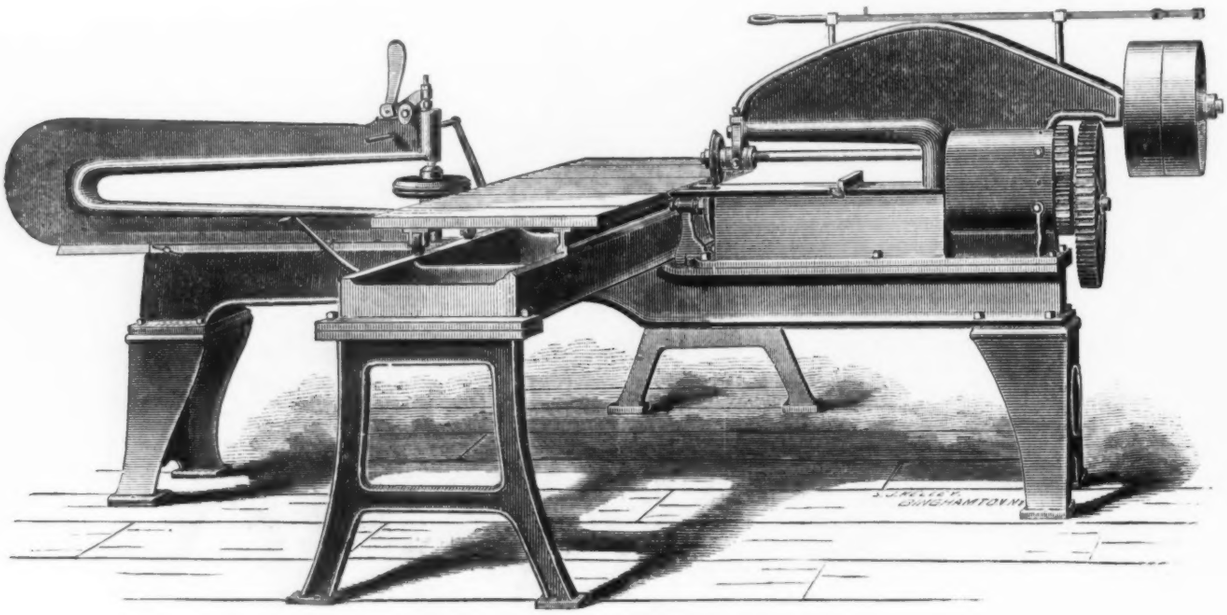
A dispatch from New Straitsville, Ohio, states that the Columbus and Hocking Coal and Iron Company's Bessie Furnace closed down on the 10th inst. for much-needed repairs. It will be closed for at least three months. Every furnace in the Hocking Valley is now closed, this being the last. It was kept running on account of the fine grade of iron it was making.

to San Domingo, and offers every inducement and facility in the way of granting valuable franchises. Under privileges thus conferred large plantations have been established and lines of steamers are engaged in transporting the products to market. The republic is rapidly being spanned by railroads constructed by Americans. Nathaniel McKay, a New Yorker, is building an iron bridge across the Ozama River, connecting San Domingo City with the historic town of Pagarito. Mr. McKay has the absolute usufruct of the river for 30 years, which will be a very large income upon the capital invested. H. L. Bean, the vice-president of the railroad company known as the San Domingo Central, has been granted a concession in land, &c., to construct a road from Barahona on the south to Manzanilla on the north. This road passes through the valuable wooded forest of Neiba and the immense salt mountains about 25 miles from Barahona. These salt mines are inexhaustible, and produce salt in blocks, as beautifully transparent as ice. Ogden P. Pell, another

New Yorker, has been granted a concession to construct a railroad from San Domingo City to Azua. The branch of the road from San Domingo City to San Cristo is now being constructed. This district now produces a large quantity of sugar, coffee, cocoa and so on. It is rich in minerals, such as gold, copper and iron. The iron ore is said to be of a better and richer quality and larger quantity than that of Santiago de Cuba.

Rotary Circling and Slitting Shear.

The accompanying engraving represents the Niagara Stamping and Tool Company's new power circling and slitting shear combined, as designed and built by them to the order of the U. Baird Machine Company, of Pittsburgh, Pa. The depth of the throat is 25 inches, enabling it to slit a 50-inch sheet of No. 10 iron or lighter with ease and accuracy. The cutters are 6 inches in diameter and are made of the best quality steel. The circling-arm has a sensitive feature enabling it to be set to an index-plate on the frame with ease and accuracy by the aid of a rack and pinion, actuated by crank shown near slitting-table. This shear is provided with loose and tight pulleys 16 inches diameter, 2½-inch face, and a belt-shifter fixed on frame as shown in the cut. The shear complete weighs 3500 pounds, and is fitted and finished in a workmanlike manner that reflects credit on its designer and builder.



POWER BACK-GEARED ROTARY CIRCLING AND SLITTING SHEAR.

Trade with South America.

Arguing in favor of the cultivation of closer commercial relations with the continent south of us, the Philadelphia *Press* says:

This question must be approached in an American spirit, and not in a partisan spirit. Free trade and protection cuts no figure in the problem. We have the goods these republics want. They are as cheap, quality for quality, as European goods. These South American countries produce the commodities we want. Facilitate exchange and the problem is solved. If regular communication and adequate banking facilities will not do this we do not know what will do it. In these South American republics there are comparatively few railroads and limited telegraph lines. The supply for these and for everything fabricated from iron and steel must in a great measure be sent to them by foreign countries. In the same way textile fabrics must be suppled for years to come. The United States is in a situation to do this, providing sufficient encouragement is given steamship companies to start communication. The need of a new market for our surplus industrial products will soon be great. Frequent and rapid communication by steam between the United States and the South American republics is the first step toward making a market for our manufactures in South America. Then American banks in all the principal South American cities would make our exchanges direct, instead of through London and Liverpool. During the 20 years from 1865 to 1884 the trade between ten South American republics, Central America and the United States, has been $1,627,877,554, including $442,048,975 exports from the United States, and $1,185,828,579 imports into the United States from thence, being a balance of trade in favor of these republics of $765,922,219, which has been paid by the United States in gold through London and Liverpool, mostly through the medium of English manufactures. These aggregates do not include the trade with Bolivia, Ecuador and Paraguay. In 20 years Brazil has imported from the United States $145,994,246 and has exported to the United States $724,014,250, being a balance in favor of Brazil of $579,020,004, which has been paid in gold through London and Liverpool, in which case English goods settled the balance. Why not American goods? In view of all this is it not about time we had a practical, sensible American policy which will build up this trade?

The British Columbia Board of Trade, at its annual meeting, adopted a report in favor of reciprocity with the United States. Reference is made to the vast iron deposits in the province which would be utilized to the advantage of both countries were reciprocity adopted. The Canadian flour millers also ask for reciprocity.

The United States of Colombia.

Viewed from the New Orleans standpoint, the Republic of Colombia, of all the neighboring countries with whom it is desirable to cultivate trade relations, is the most promising field, and it is probable that at the coming Congress of American Nations at Washington, next October, special efforts will be made to extend commercial intercourse in that direction. In varied and valuable natural products, the New Orleans *Times-Democrat* says, that country is most bountifully endowed. Its mineral deposits are among the richest in the world. Gold, silver, platinum, copper, zinc and precious stones are found in abundance. The mines of Antioquia, Cauca, Tolima and other departments have few equals. Despite the lack of improved implements for extraction and reduction, and the fact that these mines have not been constantly worked, the product sent to market has been enormous. When the system of internal transportation now being inaugurated is completed and improved machinery can be carried to the mines, Colombia will become one of the principal sources of gold and silver supply for the world.

All the fruits indigenous to the tropical and temperate zones grow in profusion. Coffee, cocoa, sugar-cane, corn, rice, wheat and other food products bountifully repay even the semblance of cultivation. There are immense virgin forests of the most valuable cabinet and building woods. Textile and medicinal plants are found in plenty throughout the country. The prairies are carpeted with perennial and succulent grasses, subsisting immense herds of cattle, which constitute a large item of export. The great natural advantages of Colombia are not the only considerations that attract attention. Its form and system of government are similar to our own. Its laws are ably and honestly administered. Its people have a friendly sentiment for us and desire closer relations. The country is in a condition of profound and permanent peace. Under the leadership of President Rafael Nunez, a statesman of broad, enlightened and patriotic views, a general system of progressive development has been inaugurated.

Continuous Molding Machinery.

At a meeting of the British Iron and Steel Institute, Mr. James Johnston read a paper bearing the above title, which is of such interest to American foundry men that we give it a place in our columns. It is as follows:

The continuous molding machinery which forms the subject of this paper is now being employed at M. Godin's foundry at Guise, in France, where it is employed in the production of cast-iron ranges for cooking and other domestic purposes. The foundry has established a good reputation in France, owing both to the ingenious inventions introduced by M. Godin, and also by the high character of the work which is produced. In a trade of this kind there is a large amount of repetition in the several patterns to be reproduced, and the machinery I am about to describe was invented by M. Godin, to enable these repeat-castings to be made, not only in a more economical manner, but in as high a class of work as possible. The result has been just such as the inventor of the machinery and other appliances anticipated, for 43 men, by the aid of the apparatus, can produce the same quantity of castings that 300 men formerly produced of a similar kind by hand.

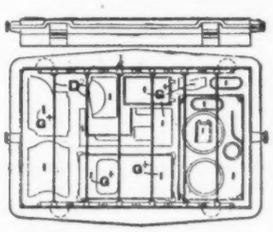
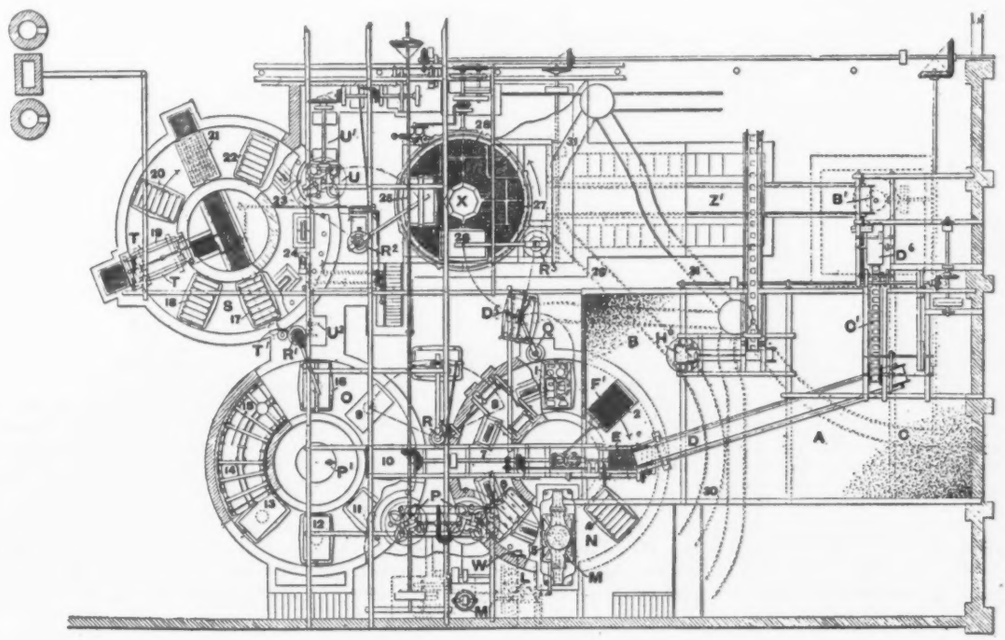


Fig. 2.—View of Molding-Boxes.

Molding-Tables.—The arrangement consists of, first, a set of molding boxes 1 2 3 4 5 6 7 8 (Fig. 1), which receive the patterns or models, with their upper parts planed and ribs below, perfectly even on their surfaces; they are fixed upon supports and bolted to a revolving platform, N, guided above and below in the chairs with strong strings passing across the beams supporting the tables, so as to allow them to lower when the pressure is put on and to rise when the pressure is taken off. At each extremity of the springs there are holes through which the bolts pass, and they are fastened upon the surface of the turning-platform. Over these tables are placed the formative parts or patterns, on which the boxes are placed to form the mold in.

Boxes and Loose Cross-Bars. — These boxes, 1 to 8 (see Fig. 2), are cast frames of a uniform thickness with strong ribs on their external circumference and carrying on each side and on the middle of their breadth a trunnion, which enables them, when suspended on the arms of the levers of the cranes to turn upon themselves. The ribs cast with the frame give to the boxes the power of resisting the pressure which they have to support from the hydraulic press M, while allowing them to be as light as possible. Each box is composed of two parts. The first, or under part, has ears with holes, the second, or upper part, having ears with pins and being intended to be placed on the lower part. Their special mode of construction secures that all the parts, whatever they may be, will fit into each other. To keep the sand in the boxes, to prevent the pressed molds from breaking during their several handlings, and to facilitate the cleaning of the boxes, movable cross-bars, D^2, are used. There are six of these bars in each half of the box, placed at equal distances cross-wise. Their length is slightly less than the width of the box, and their form is that of a ⊺, with flanges at each end to make them press against the internal wall of the box. These cross-bars are placed on the sand as soon as the mold is filled, and are forced into the sand at the same time that the mold is formed under the action of the hydraulic press M. A system of hooks, which will be explained further on, enables these bars to be removed when the boxes are ready for cleaning out the castings, and they are again employed for fresh molds.

Runners or Gits for Molds.—In order to leave the openings necessary for the passage of the metal in casting the pieces to be produced, git patterns are laid vertically on the models. These movable gits, described in Fig. 2 and in G + G +, and in detail in Fig. 6, are made in three parts—(1) the movable brass plate A^1, (2) a series of springs, B^1, (3) a box forming a cap, C^1. The movable plate A^1 carries one or more bolts, according to its length, and slides with a gentle friction into the box C^1. The bolts serve to fix the git on the models or shaping pieces by connecting themselves with little mortises made for this purpose. The total hight of the git is greater than the thickness of the molds. Under the action of the press the springs contract, and the box C^1 sliding on the plate A^1 makes the git piece the hight of the mold. To remove the git, the attendant has only to give to the top of the box some slight blows, which shake the sand and thus allow the spring to expand; the git lengthens and pushes up the box, which can now be easily removed by hand, and there is no sand to cut away, the cap of the box leaving a funnel-shaped opening



Continuous Molding Machinery.—Fig. 1.—Plan of Molding-Tables.

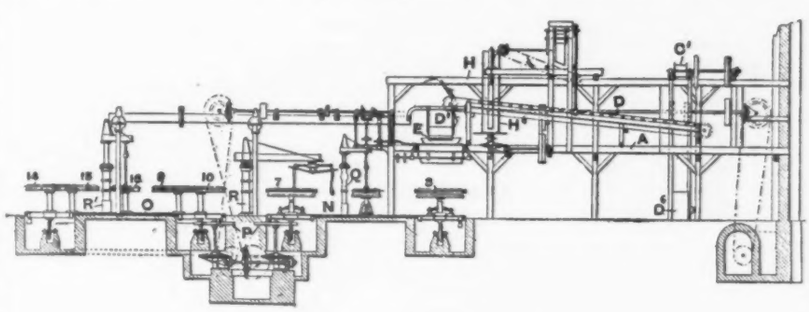


Fig. 3.—Front Elevation of Molding-Tables.

destined for the introduction of the metal to cast the pieces to be produced. As soon as the mold is pressed, and is outside of the press M, the work of cutting out and removing the git pattern by means of special pincers is done, and the openings are made good for running in the metal.

Distribution of Sand in the Molds.—Before the work of molding begins, there is springs carrying the eight parts of the pattern, and each pattern is composed of two parts, which form a complete mold. Each part is placed on a table. The first—viz., the under part—reproducing one face of the model to be molded, ought always up to the time they are united to precede the second part, and, consequently, to be one table in advance

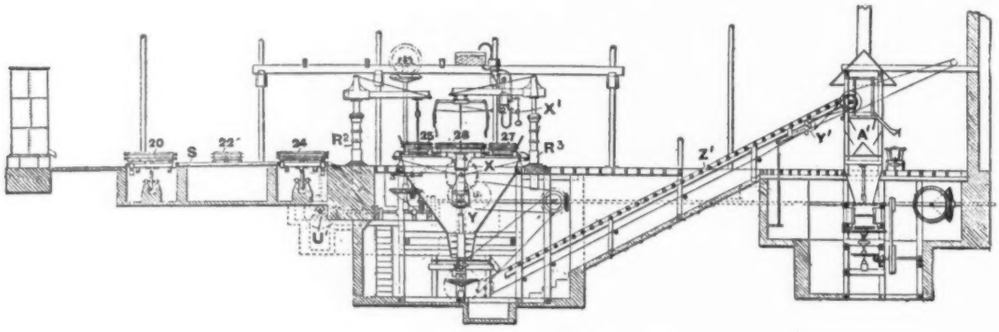


Fig. 4.—Longitudinal Section.

prepared on the upper stage A, Figs. 1, 2, 3, 4, 5, 7, intended for the reception and handling of the sand, two heaps of sand, B and C, to form a reserve. The special sand, perfectly worked up in the mixer H^6, is applied to form the first layer on the pattern, and gives to the pieces produced a fine finish. This sand, coming directly from the vertical mixer H^6, is laid in fixed quantities upon the sieve F^1, formed of wire gauze with fine meshes, and by a very energetic jogging movement is thrown upon the models or pattern. The ordinary sand coming from the mixer is conveyed to the upper stage with buckets or belt, and thrown on to the endless band D, which conducts it to the box D^1, opening at the bottom and placed above the grating E. The capacity of this box is exactly what is necessary for filling up one box, plus the hight of sand found to be advantageous for compressing the mold. A rake or grid, rectilineally moved to and fro, throws it upon the special sand in the box forming the first layer. The first sieve F^1, which is moved very quickly, distributes the special sand. The second sieve or grating E, over which the rake passes, moves at a slower speed in distributing the ordinary sand. These two sieves, driven by the same shaft, always work together, and constantly distribute the sand at the same time to the two parts of the boxes placed on their respective patterns or molds.

The Operation of Molding.—The molding is done upon a turning platform N, on which there are fixed at equal distances from each other eight boxes mounted on

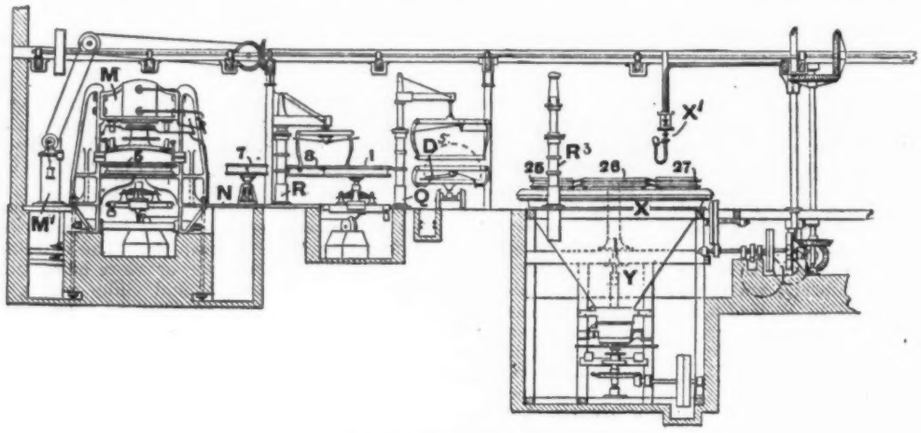


Fig. 5.—Transverse Section.

of the last. The second, or upper part, reproduces the other face of the model. On this part are placed the movable git patterns, intended after the models have passed the hydraulic press to be removed from the mold by the workman retained for this service, in order to leave in the pressed sand the openings necessary for the introduction of the metal for filling the mold. These two parts, when pressed, are placed one on the other, the part carrying the movable gits being above, and they form the complete mold. This operation of connecting them is called the *remmoulage*. In this way a succession of molds is supplied as fast as they can be cast, for the molding commences invariably at the point 1 on the first turning-table N. At this point 1 the movable git patterns are placed on the pattern

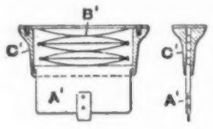


Fig. 6.—Detail of Movable Gits.

in the box; at the point 2 the distributive sieve throws upon the box the fine special sand intended to form the first layer for covering the patterns. At the point 3 there is placed on the box a wooden frame, used to determine the hight of the sand required for the compression of the model. Another distributive sieve com-

tion. As soon as the box filled with sand has reached the point 5 the hydraulic press M descends and carries down the compressing-plate, which presses the sand down to the edge of the molding-box; then the press, acting in the contrary direction, makes the plate rise, and at the same time communicates a turning movement to the platform N and the platform O (which during the operation of pressing had been stopped). The stoppage of the turning platforms N and O and their resumption of movement are effected by eight movable rollers placed on the outer circumference of the circle of the turning-platform N. These rollers press at each eighth of a revolution upon a lever with a sloping surface, W^1, which falls upon the gearing-apparatus that gives a turning motion to the platforms N and O. When the compressing-plate of the press M has ascended to the top of its course the box pressed has reached the point 6, and the following box is under the press. At the point 6 the workman charged with the work of taking out the gits commences his task, which consists of taking out the git patterns, cleaning them and pressing the sand so as to make good the opening left by the git pattern. This operation is executed during the stoppage and the advance of the turning-platform, and is entirely ended before the mold arrives at the point 7, the mold which precedes it, which contains the lower part, having already arrived at 8. At this point 8 the mold is taken from above the pattern by the autotmatic system of detachment

governed by the hydraulic crane R, which transfers it to the point 9. Here the workman makes the model turn half over while he pushes it on the side of the turning platform O, and the crane lays it down on the table 9, mounted on the adjusting-platform O. This turning-platform O moves in the direction indicated by the arrow, and carries eight tables, 9 to 16, fixed at equal distances one from the other. These tables are intended to receive the molding-boxes coming from the turning platform, which are taken off, each in its turn, by the hydraulic crane R. The distance to be traversed between the point 9, where the models are invariably set down, and the point 16, where they are taken away, is calculated so that the workmen have the time necessary for finishing off the molds. The turning platforms N and O are driven by the same movement, and consequently always work together. The proportions of the wheels P, which drive the two platforms, are so regulated that when the turning-platform N makes one-eighth revolution platform O makes one-eighth turn also, whence it arises that the tables are at each time of stoppage found at the same respective places.

Ungudgeoning the Frames.—To take a frame off the mold it must be raised horizontally and parallel to the plane of the models or forming pieces until the mold is completely detached from them. At the instant when the platform N stops, the attendant who is at the dismounting crane acts on the lever A^3 (Figs. 8 and 9), and seizes hold of the frame by its trunnions, B^3. By this movement the ear C^3 is brought close underneath the lever D^3, which is fixed on the body of the crane E^3. When the crane rises, the ear C^3, which is united with the flying piece, rises also, and lifts up the lever D^3. This is connected by a rod, F^3, with a lever, G^3, fastened on the shaft A^4, which carries two levers, B^4 and C^4. This shaft, A^4, by means of two levers united by a bar, governs a second shaft, H^3, which also carries two levers, D^4 and E^4. These four levers, B^4 C^4 D^4 E^4, are jointed to the levers F^4 G^4 H^4 I^4, so that when the lever G^3 is raised by the lever D^3 the four arms F^4 G^4 H^4 I^4 rise also and, following the direction given to them by their guides, J^4 K^4 L^4 M^4, seize simultaneously the transverse ribs of the box and raise it as much as is necessary. A little before the ear C^3 leaves the lever D^3 the arms R^4 of the crane, which end in eyelet-holes, seize the trunnions B^3 of the frame, and by the time this frame has been seized by its trunnions the ear C^3 has escaped from the lever D^3 and descends by the gravitation of the system to resume its former position. Balance weights fastened on the shafts prevent the system descending too quickly.

Producing a Jet of Spray (shown in Figs. 10 to 13).—As soon as the dismounting crane R has laid a mold down on the

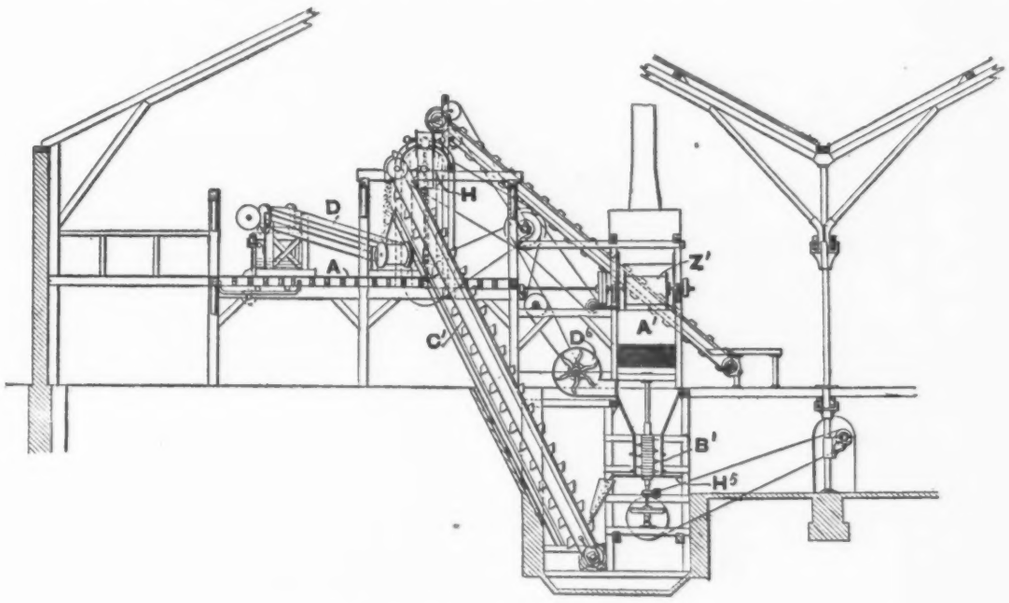


Fig. 7.—Enlarged View of Elevator.

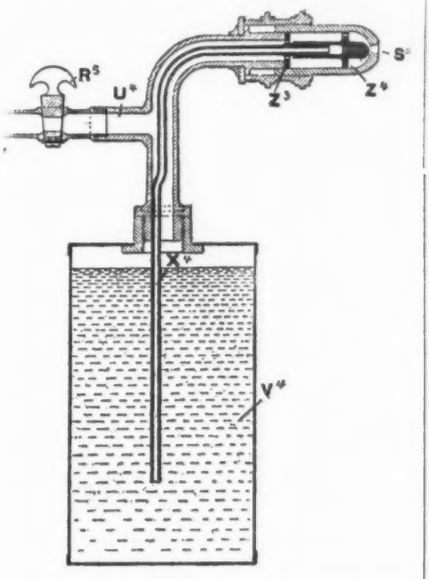
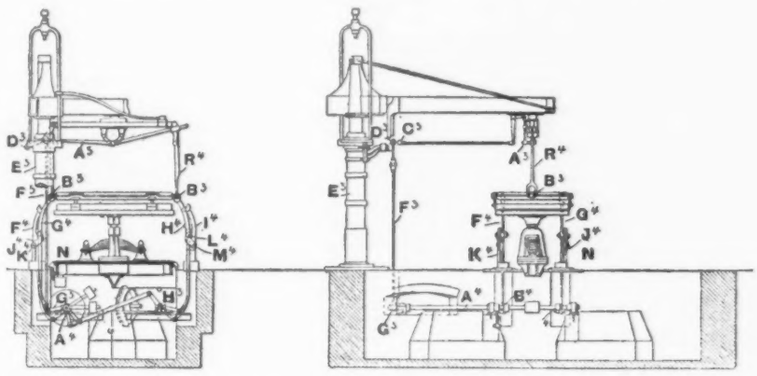


Fig. 10.—Section of Spraying Apparatus.



Figs. 8 and 9.—Sections Showing Apparatus for Removing Frames.

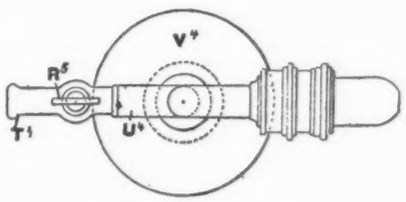


Fig. 11.—Top View of Fig. 10.

Figs. 12 and 13.—Orifices of Plugs.

table 9 of the readjustment platform this apparatus, which is distinguished by the letter P_1 on Fig. 1 and the figures 17, 18, 19, 20, is placed upon a circular table concentric with the readjustment platform O—a table on which are placed the tools used by the workmen employed in the readjustment. When the frame has been laid down on 9 the workman takes up the apparatus P_1, opens the cock R^5 and directs the jet of water which comes out upon all parts of the mold to be moistened. The small table T^4 of the cock R^5 communicates by pipes with a reservoir of air subjected to a slight pressure by an air pump, M^1, Fig. 1. As soon as the cock R^5 is opened, the compressed air passing through the small tube U^4 descends into the box V^4, which is filled with water, and, acting on the surface of the liquid, makes it rise through the tube X^4, which ends in a small tube pierced by a very small hole. In issuing from this small hole the water comes into contact with the compressed air, which circulates round the pipe X^4 after it has passed through the orifices of the plugs Z^3 and Z^4, and, following the hemispherical partitions, the spout S^5 splits up the water which it throws out with it. The water, thus reduced to a spray, allows the charcoal dust to attach itself to the surface of the mold and make it sufficiently smooth.

Management of the Molds.—The different arrangements for the transport of the empty boxes and the molds are effected by hydraulic jib cranes Q R R^1 R^2. Their construction does not differ from that in ordinary use. What is particular in their employment is the system of suspension and of hooking in order to lift up the boxes, and the mathematical precision with which they transport the molds from one turning-platform to another without requiring from the workmen sustained attention. At the end of the jib there is a beam carrying an iron piece, having at its extremities two suspended arms, which serve to take hold of the trunnions of the molding boxes in order to raise them, and especially, so far as concerns the crane R, to take hold of the system of levers placed above the tables, and intended to operate in a correct manner in the disengagement of the mold. These suspended arms can, by means of a system of jointed beams, according as it is wanted, be either done together or separately, so as to either take up the boxes or lay them down.

Turning-Platform, Fastening the Boxes, and Casting.—When the mold which has been placed on table 9 reaches the point 16, the hydraulic crane R^1, resembling the crane R, takes up the first or under part of the mold and deposits it on a hollow plate, 17, perfectly adjusted and fixed on the turning-platform S. While this operation is goning on, another mold has reached the point 16. The same crane takes up afresh the second part of the mold—the upper part. The workman gives the mold a half turn, and places it on the lower part. These two parts, put one on the other, form the first mold to be cast. The turning-platform S resembles the turning platform N, on which are fixed, at equal distances from each other, eight frames intended to receive the parts of the box which are to be united in one mold, and the molds to be cast. The eight frames, 17 to 24, in times of bolting or stoppage, are always in the position indicated in Figs. 1, 3, 4, 5, 7. A cam-wheel, U, driven by the movement U^1, turns in the direction of the arrow the turning-platform, which stops at every one-eighth of a revolution. A lever for throwing out of gear U^2, moved by hand, allows of the platform being turned at pleasure, and consequently displacing the tables. The point T^1 ought to be always free and ready to receive the molds to be united. As soon as this union is effected, the workman acts on the gearing lever U^2 and makes the platform advance one division. At the point 19 is placed a cast frame, T T, of a fixed weight, intended to effect the closure of the two parts of the box forming the mold, and thus to hinder any escape of the metal at the moment of casting. This frame T T, although occupying a fixed position, may at pleasure, in accordance with what is wanted, be raised or lowered, enlarged or contracted, by means of a system of levers governed by the hand-wheel T^1 (shown in detail in Fig. 18); below this frame T T all the molds stop, each in turn, to be cast. When the mold arrives at the point 19 it is just below this frame. At this moment the workman acts on the wheel, which makes the frame descend upon the mold to be cast and gives it the necessary pressure. As soon as the operation of fastening is ended, he pro-

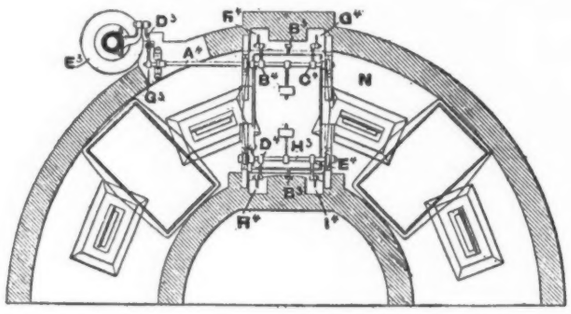


Fig. 14.—Details of Fig. 9.

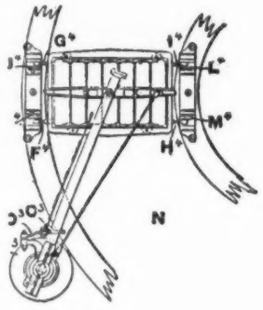


Fig. 15.—Section of Top of Fig. 8.

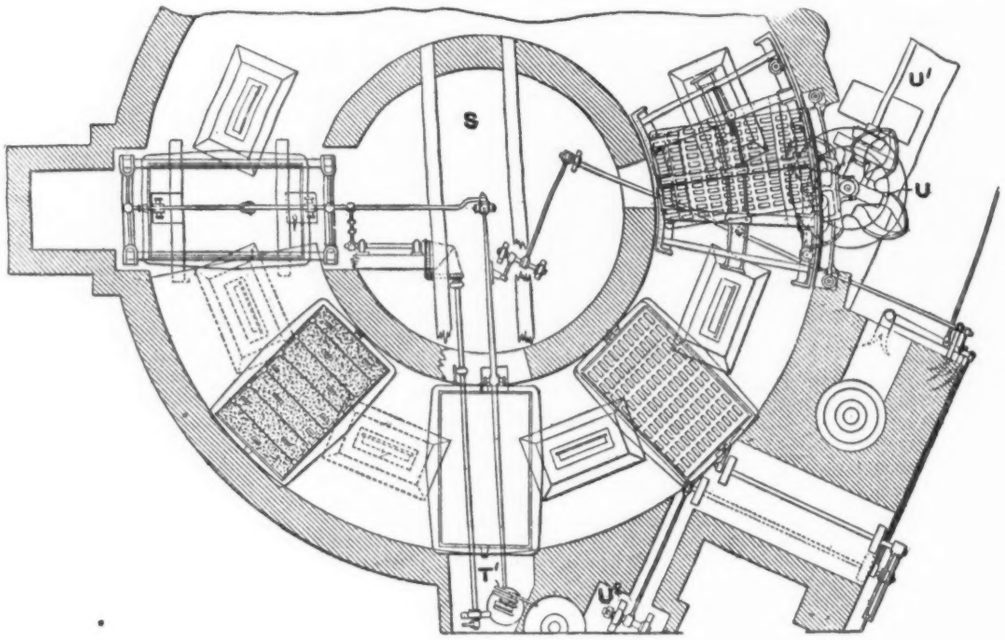


Fig. 17.—Detail of Turning-Table.

ceeds immediately to pour the metal into the mold. When the casting is made the workman acts anew on the hand-wheel in the contrary direction and makes the frame T T ascend. As soon as this operation is finished he causes the turning-platform to advance and secures another molding-box under the frame. The cast mold is then taken on to the point 23.

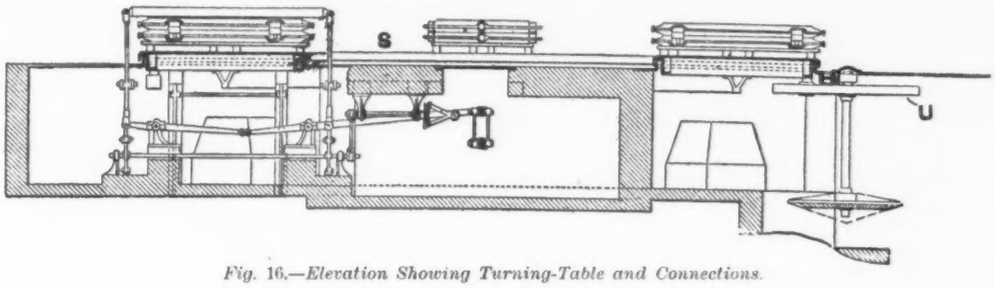


Fig. 16.—Elevation Showing Turning-Table and Connections.

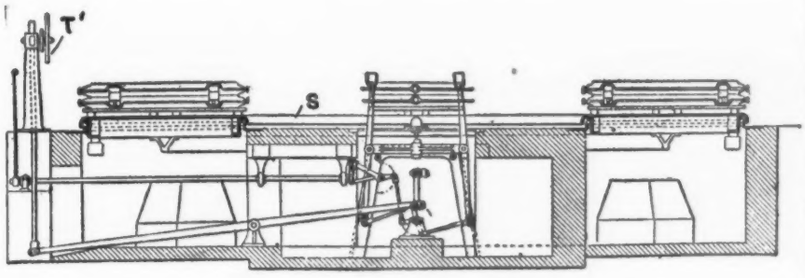


Fig. 18.—Section Showing Turning Apparatus and Levers.

Emptying the Molding-Boxes.—The hydraulic-crane R^3 takes away the molding-box from the turning-platform at 23 and deposits it on the turning-platform X at 25. As soon as this has been deposited, and while the crane is returning to take another box, a workman has caused the turning-platform X to make in the direction of the arrow a quarter of a revolution, which brings the box to be emptied from 25 to 26. This turning-platform, at a time of stoppage, is always in the position indicated on Fig. 1, and the four divisions, 25 to 28, indicate the position of the boxes. The boxes thus transported rest on four supports, which keep those to be emptied from the grating. These same supports serve as cushions to two shafts provided with hooks intended to catch the cross-bars, which are found in the lower part of the box. An empty space between the lower part of the box and the top of the grating permits the working of these shafts furnished with hooks. The turning-platform X, serving for the clearing out of the molding boxes, is furnished on the surface with cast gratings, forming open squares, sufficiently small to prevent small pieces of castings passing through, but large enough to allow the sand to go through easily. The box having arrived at the point 26, the movable bars of the upper part of the box are taken out one by one by hand, by means of a special hook, and the six bars in the lower box are grasped all at once by the hooks on the two shafts. As soon as this operation is finished, the hydraulic crane R^3 takes away both parts of the box empty, and deposits them on the table D^5, leaving on the turning-platform the cross-bars, the sand and the castings produced. At this point a small hydraulic crane takes up the casting boxes as fast as they present themselves, and places them with mathematical precision upon the formative parts at the point 1. As soon as this part of the casting-box is in place, the turning-platform N, by means of the gearing apparatus L, produces one-eighth of a revolution, and consequently makes each table advance in the direction of the arrow by this eighth of a revolution, carrying the forming-table 1 to 2, and thus bringing all the tables into the position where the operation recommences. The movable cross-bars are taken away and placed on a little wagon, which carries them by the tram line 29 to 30 nearer the table 4 of the turning-platform N, to be replaced in the boxes that are to be used again for fresh molds. As soon as the movable cross-bars and empty boxes are taken away, the workman gives the platform X another one-fourth turn, and it arrives at the point 27. At this point the castings are taken off and put into a car, by which they are taken over the tramway 31 to the dressing house. When the pieces have been removed, another workman spreads the sand, waters it by means of the apparatus X^1 (shown in the detail drawings Figs. 19 and 20) placed above it, and passes it through the grating. The same operations are continued while the work goes on.

Breaking up and Transporting the Sand.—The sand coming from the molding-boxes is broken up on the grating on the platform and falls into a larger hopper, Y, the same diameter as the platform, under which is a vertical mixer intended to crush and mix the sand. The sand thus mixed falls on a turning-plate, which carries it off and throws it on to an endless band, which, in its turn, carries it up and throws it above the apparatus A^1. As this band, during its return, draws with it a certain amount of fine sand attached to its surface, it is cleared of this sand as soon as it quits the apparatus A^1 by means of a system of levers Y^1, moved by two cams, which shake the band so as to make this fine sand fall, and it is utilized in the preparation of the special sand for facing the molds. When the sand reaches the apparatus A^1 it falls on the first sieve, above which there is a rubber which makes the sand pass through the sieve, while it rejects the fragments of castings and other foreign bodies which the sand may contain.

Preparation of the Sand.—As the clearing out takes place immediately after

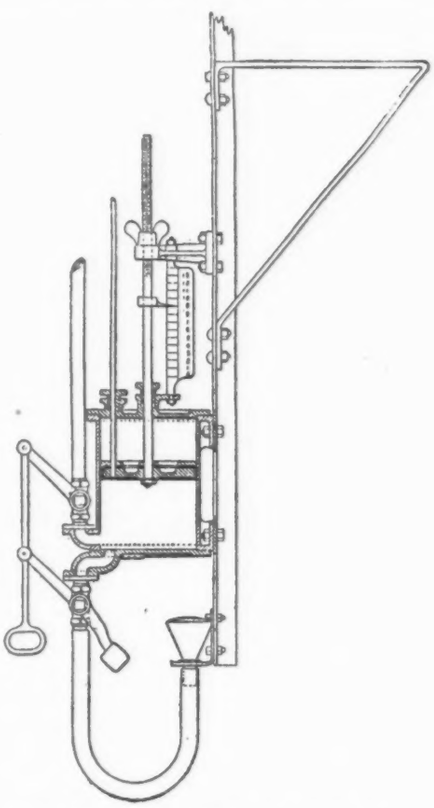


Fig. 19.—Side View of Sand-Watering Apparatus.

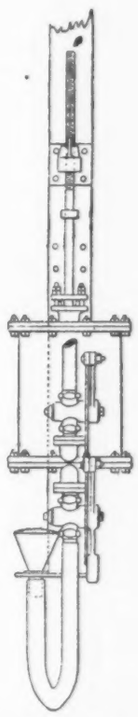


Fig. 20.—End View.

the casting, it follows that the sand when it reaches the apparatus A^1 is still hot, and in this state it cannot be used for molding. It is necessary, therefore, to cool it. This object is attained by making the sand fall after it has been previously washed, as has been stated in describing the emptying of the molding-boxes, and it is then conducted by the inclined band Z^1 to the cooling apparatus A^1. This sand is obliged to pass successively through several metallic gauze sieves and to become sifted. A ventilator, D^6, placed below these sieves constantly supplies cool air, which, passing across the sand, cools it through the double action of the current of air coming from the ventilator and the vaporization produced by the heat of the sand. It should be remarked that the principle of cooling by the vaporization produced by an active current of air was here applied for the first time to sand heated by metal castings. The sand thus cooled falls into a hopper under which is a vertical mixer, B^1, used to produce a perfect mixture of the sand. This vertical mixer consists of a cast-iron cylinder, in the center of which is a shaft furnished with wings intended to produce a perfect mixture of the cooled sand.

The present set of machinery turns out finished castings of a very high description of from 5000 to 6000 kg. per day. The works are producing 100,000 stoves and cooking ranges of various kinds per annum, and they have appliances capable of increasing that number to 150,000.

New Steel-Works at San Francisco.

Relative to the new steel plant announced to be shortly erected at San Francisco, the *Mining and Scientific Press* of that city says:

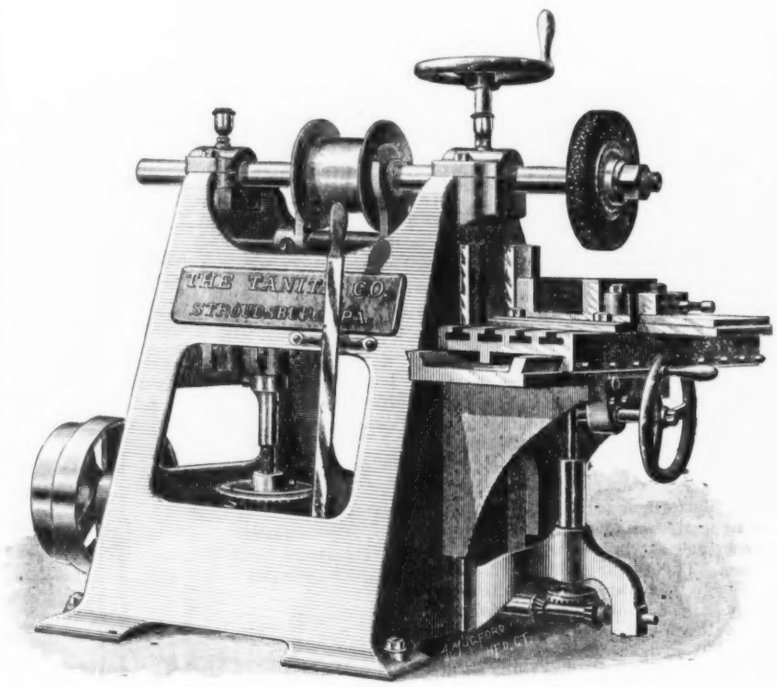
The Anglo-Pacific Steel Company were organized some time since, but have done nothing toward building the proposed works here, until recently. The projector has now secured a location at Vallejo, opposite Mare Island, the city having given 100 lots and more having been purchased. The land is given conditional to the works being established. A tract of 350 acres has been secured, southwest of Vallejo, with a water frontage of 4000 feet. Mr. Hammond, the projector, says:

"We expect to begin preparations within two months, and will probably have a portion of the plant in operation by the last of the year. The first structures erected will be four main buildings, entirely of iron, 64 x 500 feet in area. A number of other buildings, as store-houses, offices, &c., will also be built. The total investment, including plant and material, will amount to about $1,000,000. When the works are fully in operation we will employ about 1000 men. We have already engaged a number of the principal ones in the East. We will hire what labor we can on the coast and will bring the rest from the East. This number of men, with their families and others who will be drawn to the place indirectly, will make quite a city on the start. The new town of Sheffield will be regularly laid out in blocks 250 x 500 feet, with avenues 60 and 70 feet in width. The company will build houses to rent to the workmen as fast as needed, and we intend to build schoolhouses, a church, a library building and other improvements for the benefit of the community. Railroad tracks, running into our works and to our wharves, will be built, connecting with the Southern Pacific road which runs through Vallejo. There is a very active demand for steel manufactures on the coast now, and the demand will continue."

From another source we learn that the purpose of this company is to manufacture steel rails, steel plates, beams, shafts for vessels and other articles. The company is largely composed of the English capitalists who also control the Moss Bay Coal and Iron Company, in Washington Territory, where smelting-works will be erected. This enterprise anticipates the plans of the managers of the Union Iron Works, who have been discussing the feasibility of adding steel mills to their already huge plant at South San Francisco.

The Newman Emery-Planer.

This machine is designed for the rapid grinding of flat surfaces, in addition to the comparatively easy task of grinding edges. The wheel revolves at a surface speed of about 5500 feet per minute, and has in addition a to-and-fro traverse motion across the work, which is at the same time fed under it by the usual devices of a planer-bed. The result of this compound motion is that the emery-wheel cuts with great freedom and rapidity. It is claimed that this wheel will take a cut $\frac{1}{4}$ inch deep, and that it has been made to take a cut $\frac{1}{16}$ inch deep over a surface of 100 square inches in six minutes and nine seconds. The frame of the machine is in one solid casting, which adds greatly to the rigidity of the tool and increases the accuracy of the work performed by it. This machine is made by the Tanite Company, of Stroudsburg, Pa.



THE NEWMAN EMERY-PLANER.

Notes on Electric Railways Using Thomson-Houston System.

The popularity of electric railways is evidenced by the recent purchase of the Des Moines Broad-Gauge Railway, equipped with the Thomson-Houston system, by a wealthy Chicago syndicate, the purchasing price being $350,000, some three times the original cost of the road. When equipped with horses this road did not pay operating expenses, but since its equipment and operation under the Thomson-Houston system its net earnings will pay 8 per cent. dividends upon an investment of nearly $400,000. The road has never had a repair-shop for its electrical apparatus, and in a recent conversation its president said that they did not know what electrical repairs meant, as they had had none to make. In some respects the Des Moines road has been the most wonderful in results of any electrically equipped road; it having at its power-station but one 80 horse-power generator, which operates eight cars over grades running as high as 10 per cent., without indications of overheating, and frequently tow-cars are used with those equipped with motors. On one branch of the system the necessity of speedy equipment compelled the use of a No. 2 copper-wire without feeders, such wire being the only available material; yet with this small conductor the cars are run at a rate of six miles per hour up a 10 per cent. grade three miles distant from the station.

The Omaha and Council Bluffs Railway and Bridge Company are progressing rapidly with the electrical equipment of the recently purchased horse-car lines in Council Bluffs. For the operation of such lines they have purchased ten additional motor-trucks and two generators from the Thomson-Houston Company.

The Omaha Motor Railway Company is nearly ready to be put in operation with the Thomson-Houston electric system. The largest power-station which has yet been constructed for electric railway operation is owned by this company, and the car equipment ranks second in quantity among electric railways yet constructed, it having 26 motor-cars, all of which will be used to tow at least one additional car, and many of the motor-cars will tow two additional cars. The success of the Thomson-Houston system on the Omaha and Council Bluffs line has made the citizens of Omaha jubilant at the immediate prospect of such rapid transit being given them over their entire city. In addition to the equipment ready to be put in the company intend to add 20 additional motor-cars upon the extensions of their system within a few months.

Four new lake vessels, one of them the largest steel ship ever put into water from a Cleveland ship-yard, were launched last week.

Treatment of Steel by Hydraulic Pressure.

At the twenty-fourth ordinary meeting of the Institution of Civil Engineers of England a paper was read on the "Treatment of Steel by Hydraulic Pressure and the Plant Employed for the Purpose," by William Henry Greenwood. In this paper attention was directed to the presence of blow-holes in steel ingots, also to their origin and to the various methods proposed for the production of sound ingots, but the author treated more especially of the advantages and the development of fluid compression as shown in the plant and 10,000-ton press erected by him at the Abouchoff Works, St. Petersburg.

It was assumed that molten Bessemer, open-hearth or crucible steel possessed the quality of occluding a considerable volume of gases, especially of hydrogen and nitrogen, derived all or in part from the products of combustion in the furnace, or from other sources, and that under ordinary conditions as to pressure such occluded gases were more or less completely evolved at the moment when the particles of metal changed from the liquid to the solid state, and were thus imprisoned within the ingot in the form of bubbles of various forms and dimensions. A second source of unsoundness arose from the contraction of the metal within the ingot after its outer skin had solidified, producing contraction cavities, and lastly, the metal from ingots as usually cast was weak along the surface, owing to the development of a radial acicular structure in the cast metal. The combined effect of these three causes was that ingots of mild steel, such as were used in the construction of ordnance, large engine shafts, or other heavy forgings, for cylinder liners, torpedoes and war material, contained cavities necessitating the rejection of about 30 per cent. from the head or top end of each ingot; while to get rid of the surface honeycombs and weak acicular structure, which caused unclean, seamy and roaky forgings, an additional 10 per cent. to 20 per cent. of metal had to be left for turning and machining to waste. Even after these losses of material, the remaining metal was inferior to the same metal after fluid compression. The method of fluid compression claimed, then, to save the whole of the rejected head or top of the ingot, to reduce to a minimum the amount of metal to be left for turning or machining from the surface of forgings, and to produce for any temper of metal a greater amount of ductility, homogeneity, and reliability than was obtainable under the best conditions of casting in open molds without pressure. The additions of increased proportions of manganese and of silicon did not commend themselves to the author for the classes of steel under consideration; for although promoting solidity of the ingot they hardened, raised the elastic limit and ultimate tensile strength, but lowered the ductility and general reliability of the metal.

Of the mechanical devices for increasing the solidity of steel ingots the author noted the proposals for the cooling of the outside of the molds, for agitating the metal during solidification, casting the metal in a vacuum, and the direct application of pressure, by the use of high-pressure steam, injection of water, of explosives, of solid carbon dioxide, &c., upon the surface of the fluid steel in closed molds. These methods of fluid compression had all failed from mechanical, physical and practical difficulties in their conduct; and the plan suggested by Sir Henry Bessemer in 1856, but quite independently developed and carried to a successful issue at the works of Sir Joseph Whitworth & Co., and now known as the method for the fluid compression of steel, remained the only one before the public which yielded ingots of mild steel of practically uniform molecular structure, strength and ductility throughout their whole length. The ordinary cast-iron molds or wrought-iron casings, lined with brick or molding cement, could not be used when aggregate pressures of thousands of tons were to be exerted upon the surface of the fluid metal; but such molds were replaced in the fluid-compression process by built-up steel molds, lined with suitably-grooved cast-iron lags, protected by a coating of refractory silicious material. A loose plate of the diameter of the ingot fitted in the bottom of the mold, and was protected by an upper covering of burnt fire-clay segments, and a similar plate was carried upon the top plunger of the press for closing the top of the mold. The paper traced the development of the hydraulic press for the fluid compression of steel, commencing with the erection in 1866, in the works of Sir Joseph Whitworth & Co., of a 250-ton press, with a 12-inch cylinder, designed more especially for the compression of the metal for steel shells. In this the mold, which was partially filled with metal, was carried in a middle head of the press, whereupon a core, carried upon the top head of the press, was forced into the fluid metal, at the same time closing the mouth of the mold. After this the pressure was applied from below, as in all subsequent presses. Following this came a much more useful 2000-ton press, with two columns and 30-inch hydraulic cylinder. Its columns were secured by nuts to the base or foundation, and upon the upper ends of the columns was carried a fixed head, upon which rested a vertical hydraulic cylinder, whose piston-rod was connected to the intermediate or movable head. The intermediate head could thus be raised to any point, and then locked so as to resist the application of pressure from below.

The locking arrangement consisted of a pair of nuts, each made in halves, and so disposed that by the movement of a lever and a system of links the halves of the nuts could be either brought together or separated. When separated the head was free to move, but when closed the nuts embraced the columns and fitted into a series of parallel, slightly undercut V-grooves, which were cut as a thread along the upper halves of the length of the columns. In this manner the head was locked or secured against vertical movement under the action of the bottom or pressing cylinder. The metal was cast in the steel mold already described, and the further movements and action of this press were similar to those of the larger Abouchoff press already referred to. The next press, also erected at Manchester, had four steel columns 12 inches in diameter, and was fitted with five pressing cylinders—namely, four 28 inches in diameter and one 13 inches in diameter, capable of producing together a pressure of 8000 tons. Except for the locking arrangement, which was complicated but more nearly automatic than that last described, the principle was the same as in the last. Its columns were, however, screwed with a square screw-thread, and the locking nuts were not split, but could be made to revolve automatically as the head was raised or lowered. The five pressing cylinders were placed on the base of the press, with the small one in the center. The cylinder for lifting and lowering the movable head was carried upon the upper fixed or table of the press, while the locking of the movable head at any desired hight, according to the length of ingot under operation, was effected by four locking nuts, which could be revolved either just clear of the head or into firm contact with the same. In the latter case the head was locked fast to the columns, and was immovable under the full pressure of the press acting from below; and in the former condition the head could be freely lifted to any desired point. This 8000-ton press was placed second by the author's erection, in Russia, of the press upon the lines of the Whitworth patent of 1874. This press had four screwed columns 16 inches in diameter, and one hydraulic pressing cylinder 50 inches in diameter, capable of exerting a gross pressure of 10,000 tons.

For working the press an accumulator giving a pressure of 2 tons to the square inch was employed to effect the rapid movements of the head of the press, of the lifts, cranes, &c., during the manipulation and transference of the fluid metal from the furnaces to the mold, and of the mold under the press. The mold having been prepared, dried and warmed, was placed in position on the lift in front of the press, the ladle with the metal was run over it and the metal tapped into the mold. The ladle was then quickly run back from the face of the press, and the mold with its charge was raised until the platform rested on its top stops. A horizontal hydraulic ram then transferred the mold on its carriage to beneath the press, after which the ram was withdrawn and all workmen retired. The moving head then descended until the top plunger came fairly into contact with the fluid metal. The head, weighing 50 tons, would continue to descend for a few seconds, after which it was locked in position and the compression completed by admitting the water direct from the pumps to the large pressing cylinder. During the first few minutes the ingot shortened rapidly, and a considerable volume of gases escaped and burned from the vents around the top and bottom of the mold. The pressing was continued as long as there was any perceptible shortening. The maximum pressures attained ranged from 4 to 12 tons per square inch on the metal, and was maintained from 45 minutes to three or four hours, according to the size of ingot and the condition of the metal. The contraction in length during the application of the pressure usually amounted to about 1½ inches to the foot of length. The author then referred to the former practice of casting hollow forms under the press, which owing to various enumerated difficulties had been abandoned in favor of the solid ingot both in England and in Russia.

In the manufacture of trunnions for 6-ince breech-loading guns from unpressed ingots the practice was to take an ingot of 65 cwt., reject one-third from the top end, and then to make three trunnions from the remainder of the ingot, after which not infrequently one of the forgings was rejected for unsoundness. When pressed ingots were taken, however, five trunnions were made from the same ingot, and a rejected forging for faulty metal was unknown. The density of a fluid-compressed ingot as a whole was from 8 to 12 per cent. higher than an unpressed ingot. The author's experiments upon sound samples of crucible steel containing 0.54 per cent. of carbon gave a specific gravity of 7.8542 for the unpressed metal, as against a mean of 7.8795 for specimens of the same metal after fluid compression. In order to compare the behavior of the pressed with the unpressed metal, made from similar materials and in the same manner, the two ingots of 8 tons each were cast of open-hearth steel. The unpressed ingot contained carbon, 0.5 per cent., and manganese, 0.35 per cent. It was 30.75 inches in diameter and 82 inches long. The second was a similar ingot, but containing carbon, 0.39 per cent., and manganese, 0.4 per cent. It measured 70.5 inches in length after fluid compression, or 79 inches as cast. It was 34.25 inches in diameter. A slab of 4.75 inches in thickness and of the full length and width of the ingot was obtained from the center of each by parting each

ingot longitudinally into three pieces on the planing machine. The surfaces so obtained presented much unsoundness in the unlpressed ingot, while the pressed ingot was quite sound on both faces. The centra slab from the pressed ingot was cut up into seven series of test-pieces, in such manner that 98 test-pieces were prepared from it, but only five series, or 70 test-pieces, were obtainable from the unpressed ingot. The center test of each series was taken directly along the axis of the ingot, and test-pieces in each series were cut directly across the axis of the ingot; these were intentionally taken from the very worst part of the compressed ingot. Notwithstanding this, and that the mean results were taken over the whole length of the pressed ingot, as against the best or lower two-thirds of the unpressed ingot, and also that the test-pieces from the pressed ingot were taken over the full diameter of the ingot, while the samples from the unpressed ingot were taken only over 24 inches of the diameter, the outer and unsound 3½ inches at each end of the diameter being rejected, after these and other advantageous conditions were allowed, yet the mean

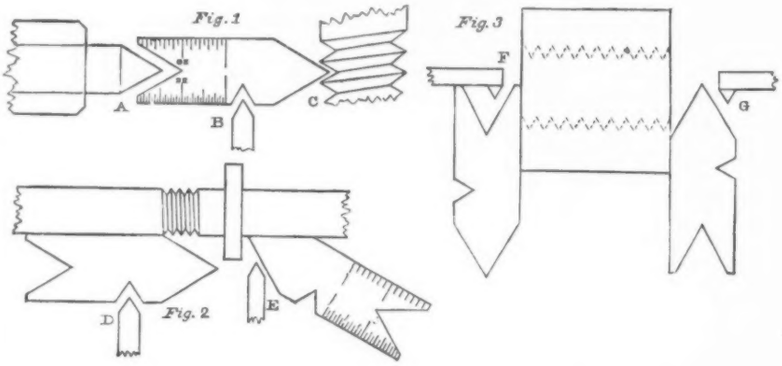
	Mean of the test-pieces cut longitudinally.			
	Elastic limit in tons per square inch.	Ultimate breaking strength in tons per square inch.	Contraction in area at point of fracture.	Elongation in 4 in.
			Per cent.	Per cent.
Unpressed ingot..	11.11	29.18	4.41	8.76
Pressed ingot.....	14.45	29.53	7.90	12.51

results from the pressed ingot over its whole volume were superior in each detail to those from the five series of tests from the unpressed ingot, and especially in the contraction of area and elongation before fracture :

	Mean of test-pieces cut transversely.			
	Elastic limit in tons per square inch.	Ultimate breaking strength in tons per square inch.	Contraction of area at point of fracture.	Elongation in 4 inches.
			Per cent.	Per cent.
Unpressed ingot.	11.43	28.04	3.61	7.91
Pressed ingot....	12.38	30.07	7.57	12.74

The results, as derived from the test-pieces cut transversely, compared equally favorably. The test-pieces were cylindrical, with collars, and the metal was not subjected to any hammering, annealing, hardening, or other treatment, except machining, after it came from the ingots. The pressed ingot gave its highest breaking strength in the upper sections, while the unpressed ingot, on the contrary, was at its best toward the bottom, and showed a rapid falling away at points exceeding one-half of the length of the ingot from the lower end; and while the elongation amounted to 12.4 per cent. in the lowermost of the tests from the unpressed ingot, it fell rapidly away toward the upper part, so that in the fifth series the mean elongation was only 2.02 per cent. The pressed ingot, on the other hand, gave a mean elongation at its lowest point of 13.7 per cent., decreasing somewhat in the succeeding series; but still, at the very top of the ingot, the elongation was represented by 11.63 per cent. The figures further indicated that, in the unpressed (where sound) and also in the fluid-compressed ingots, the mean value of the elastic limit, as also of the ultimate breaking strength of the material, was slightly greater in the metal toward the outer boundary of the ingot, and tended to decrease toward the center. In the sound portion of the unpressed ingot the mean figure for ductility was much the same, 8 per cent. at all radial distances; but with the compressed ingot there was a decided superiority in this respect as the outer boundary was approached, the figures being 8 per cent. at the center and 17.61 per cent. at the circumference; but the center approached the high figure of the outer circumference exactly as the pressure applied had been of higher intensity and more effectively applied.

The author inferred, from the figures adduced, that under mechanical tests the metal from the top or any other vertical section of a pressed ingot was, at least, equal to the unpressed ingot after one-third or upward of such ingot had been cut off or rejected; that the weakest part of the pressed ingot was along the axis, where the pressure had been least effective; but that this weakness, as compared with the outer layers, arose from insufficient pressure and could be localized; so that for hollow shafts, tubes, hoops, cylinders and the like, where the center was finally removed, either by boring or punching out, it was unnecessary to proceed to the higher pressures required to insure absolute solidity and uniformity over all parts of any section. With unpressed ingots, on the other hand, the unsoundness was irregularly distributed and not capable of such localization, even in the lower end of the ingot. The paper concluded by referring to the effects of annealing and forging upon pressed steel, with tests from various gun forgings, and also of shell metal in its soft and hardened states, as also after firing at armor plates.



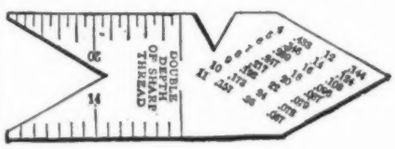
Uses of Center-Gauge.

New Center-Gauge.

This gauge is placed on the market by Darling, Brown & Sharpe, of Providence, R. I., a branch of the Brown & Sharpe Mfg. Co.

The angles used in this gauge are 60°. The four divisions upon the gauge of 14, 20, 24 and 32 parts to the inch are very useful in measuring the number of threads to the inch of taps and screws. The following parts to the inch can be determined by them, viz.: 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24, 28 and 32. In Fig. 1, at A, is shown the manner of gauging the angle to which a lathe center should be turned, at B the angle to which a screw-thread cutting-tool should be ground, and at C the correctness of the angle of a screw-thread already cut. In Fig. 2 the shaft with a screw-thread is supposed to be held between the centers of a lathe. By applying the gauge as shown at D or E the thread-tool can be set at right angles to the shaft and then fastened in place by the screw in tool-post, thereby avoiding imperfect or leaning threads. In Fig. 3, at F and G, the manner of setting the tool for cutting inside threads is illustrated.

The table on the gauge (see full-size cut) is used for determining the size of tap drills, and shows in thousandths of an inch the double depth of thread of taps and screws of the pitches most commonly used. This table is made up by dividing 1.732, the double depth of thread of a screw that is 1 pitch, by the number of threads of the various pitches shown. For instance, the decimal 0.433, representing



Center-Gauge.

the double depth of thread of a screw that is 4 pitch, is obtained by dividing 1.732 by 4. In the same manner the double depth of thread of pitches not shown in the table may be readily obtained. The double depth of thread of a screw that is 2 pitch, for instance, is one-half of 1.732. Sometimes in obtaining the double depth of thread of pitches not given in the table it is more convenient to multiply or divide some of the decimals there given. For instance, the double depth of thread of a screw that is 2 pitch may by obtained by multiplying the decimal 0.433 (4 pitch) by 2, and that of 40 pitch by dividing 0.087 (20 pitch) by 2. In obtaining figures in this manner it should be borne in mind that the ratios are inverse—the greater the number of threads to the inch the less the depth, and conversely, the fewer the threads to the inch the greater the depth. As the double depth of the thread represents the difference in the diameters of a tap and a tap drill, to obtain the diameter of a tap drill of any desired pitch it is only necessary to subtract the decimal showing the double depth of thread of that pitch from the diameter of the tap. For example, if the tap is 4 pitch and 1 inch diameter, subtract 0.433, the decimal showing the double depth of thread of this pitch in the table, from 1, and the result, 0.567 inch, is the size of the tap drill which would allow a sharp thread in the hole. The customary allowance may be made for the extent to which it is desired the threads should be flattened.

Portable Hoist.

The drawings here presented show a portable hoist built by J. G. Speidel, of Reading, Pa. The machine is suspended by a hook, and is provided with an endless hand-chain laid over the large chain-wheel, which is secured by means of a set-screw to the shaft. To this shaft is also attached a small chain-wheel for the lifting-chain. The novel feature of the upper mechanism is the automatic brake, which holds the load at any point from running down when the operator lets go the hand-chain; the brake-wheel, which is loose on the shaft, serves as a bearing for the shaft during the hoisting of the load. Surrounding the brake-wheel is a toggle frame, serving as a brake-band, hinged to

Fig. 1.

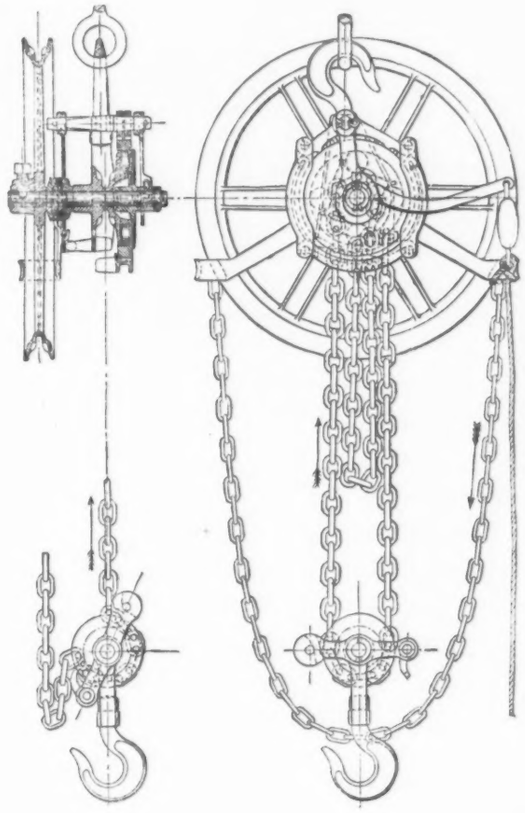


Fig. 3. *Fig.* 2.

PORTABLE HOIST. BUILT BY J. G. SPEIDEL.

the cross-bar. The lifting-chain wheel is coupled to the brake-wheel by means of rollers and cams shown in the sectional view, Fig. 1, in such a manner that it can rotate freely in the direction for hoisting, but is immediately checked from reversing its motion as the hand-chain is released. The lowering of the load is perfectly under the control of the operator, who need only pull on the hand-rope attached to the lever, having its fulcrum on the side frame. This action relieves the grip of the toggle frame on the brake-wheel. The usual method of lowering, by pulling backward the hand-chain, may also be adopted. The novel feature of the lower block is the simple method of securing two speeds, which is of importance where variable loads are to be lifted. Fig. 3 shows the block in position for the fast speed, while Fig. 2 shows the pawl disengaged for the slow speed. This device is self-disengaging when a load is to be lowered below the point from which it was lifted, and gives the block a wide range of adaptability, so that it can be used on cranes and other hoisting-machines. It is claimed that in this machine the friction is not more than from 8 to 10 per cent. of the power applied.

A Large Coke Transaction.

Information comes from Pittsburgh that the H. C. Frick Coke Company, of that city, have just secured, by purchase, entire control of the interests of the Connellsville Coke and Iron Company, consisting of 1500 ovens and 9000 acres of valuable coal lands, situated in the Connellsville coke region. Before making this purchase the H. C. Frick Coke Company owned 4140 coke ovens and about 7000 acres of coal lands. They now own 5640 ovens and 16,000 acres of the most valuable coal lands in the Connellsville region, making them the largest coke-producing concern in the world. The property just purchased lies adjacent to the property of the Frick Company. It has three plants of coke ovens on it now, each consisting of 500 ovens. They are known as Leisenring No. 1, located at Leisenring; Leisenring No. 2, located at West Leisenring, and Leisenring No. 3, located at Monarch. At present the H. C. Frick Coke Company have a capacity for turning out 12,000 tons of coke daily, or about 600 cars. The other larger operators in the Connellsville region are the J. M. Schoonmaker Coke Company, the McClure Coke Company, W. J. Rainey and J. W. Moore & Co., but their combined capacity is only about one-half the production of the Frick Company. Although the terms of the sale were agreed to by the parties on the 10th inst., the transfer of the property will not take place until August 1 next. The office of the Connellsville Coke and Iron Company will be removed on that date from No. 5 Sixth avenue, Pittsburgh, to the office of the H. C. Frick Company, at No. 48 Fifth avenue. N. P. Hyndman, who has been the general sales agent of the Connellsville Coke and Iron Company for some years, has made arrangements to continue with the H. C. Frick Company.

Transpacific Steamship Communication.

The Canadian Parliament at Ottawa is making a determined effort to establish a steamship line to Australia, and to this end is prepared to make liberal arrangements, both as to trade and tariff, in hopes of offering such superior advantages in comparison with any line to San Francisco that trade with the Antipodes shall be concentrated on the new route via British Columbia. A commissioner fully empowered to effect this object left Montreal a week ago for England, there to confer with representatives of the Australian colonies preparatory to attending an intercolonial conference in the autumn. The Canadian Parliament has granted an annual subsidy of $125,000, and confidence is expressed that at the expiration of the contracts for the transportation of the mails between San Francisco, New Zealand and New South Wales the colonies will quickly take advantage of the new route. It remains to be seen whether such action can drive the American lines from the Pacific. It is stated on Canadian authority that it will be the duty of the commissioner, Hon. J. J. C. Abbott, "to convince the Australians that as speedy, as economical and as convenient a communication can be maintained between the Antipodes and British Columbia as with San Francisco, and that the facilities for trade will be in no wise diminished."

The Michigan Anti-Trust Law.

The enacting clause of the bill passed by the Legislature of Michigan for the suppression of trusts reads thus:

> All contracts, agreements, understandings and combinations made, entered into, or knowingly assented to by and between any parties capable of making a contract or agreement which would be valid at law or in equity, the purpose or object or intent of which shall be to limit, control, or in any manner to restrict or regulate the amount of production or the quantity of any article or commodity to be raised or produced by mining, manufacture, agriculture, or any other branch of business or labor, or to enhance, control, or regulate the market price thereof, or in any manner to prevent or restrict free competition in the production or sale of any such article or commodity, shall be utterly illegal and void, and every such contract, agreement, understanding and combination shall constitute a criminal conspiracy.

There is a subsequent provision which excepts organizations of labor from the operation of the act. Analyzing this bill the Chicago *Inter-Ocean* says: "Its intent and purpose are clear enough; such combinations of capital as seek to control the price, distribution or production of anything which the people have to pay for are declared illegal, and their acts and contracts void in civil law and felonious in criminal law. The bill is the more remarkable in that it is not the production of a demagogue or party leader, but of a lawyer who has been Chief Justice of the Supreme Court, and who, in the place-hunter's sense of the phrase, is 'out of politics.'"

A new furnace has been introduced into some of the steam manufacturing plants of Maine. It is constructed for the burning of refuse matter from the sawmills in such

a manner as to yield the greatest economy with the least consumption of fuel. The furnace is built directly in front of the boiler, so that the whole extent of the boiler is within the combustion-chamber. A long grate, on which the burning fuel lies, receives the sawdust from scuttles overhead, the sawdust being carried from the mills through pipes by means of blowers. The bridge wall is not constructed in the usual way, but is solid, the gases passing through two large circular passages which incline upward and are set on an angle so as to approach each other when delivering into the combustion-chamber. In this way the gases generated into one cylinder cross and mingle with those entering from the other passage. A sufficient quantity of air is admitted at this point, which combines with the recently-united gases and forms a perfect combustion. This furnace is now in use in saw and paper mills in Bangor, Gardiner, Biddeford, Brewer and other places.

Tumbling-Barrel for Burnishing.

Various substances or solutions are used in tumbling-barrels to brighten small metallic goods, and when the proper kind of barrel is used the quality of the work compares favorably with buffed or burnished work. A barrel designed for that purpose is shown in the accompanying engravings. It is made of wrought-brass or wrought-iron, water-tight, and is mounted on an oblique shaft having a tipping arrangement for convenience of emptying and cleaning. Up to a certain stage an iron barrel will do for brass goods, but a brass barrel must be used to produce the finer finish. Being open-mouthed the contents can always be seen and at the right time the coarse substances be changed for finer, or the dirty water for clean water, or an artificial color be given to the goods. The barrel is bolted to the large friction-wheel that drives it and can readily be taken off, so that a brass barrel and an iron one could be used alternately. When in running position it can be stopped by means of the lever at the rear of the barrel, which slightly elevates it, causing a separation of the friction-wheels. This barrel is made by Henderson Brothers, of Waterbury, Conn., who are also the manufacturers of exhaust tumbling-barrels.

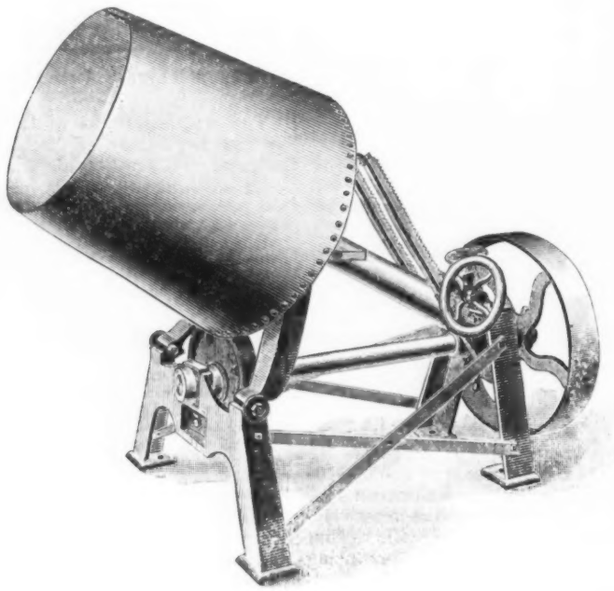


Fig. 1.—Running Position.

TUMBLING-BARREL FOR BURNISHING.

Mexico and Japan.

The following are the more important sections, commercially considered, of the reciprocal treaty between Mexico and Japan, recently promulgated. After providing for the freedom of commerce and navigation and the right of Mexican citizens to reside and trade without restriction in any part of the Japanese empire, subject only to the jurisdiction of the imperial court, articles VI and VII stipulate as follows:

Art. VI. No other or higher duties or charges on account of tonnage, light or harbor dues, pilotage, quarantine, salvage in case of damage, or any other local charges, shall be imposed in any of the ports of the United Mexican States on vessels of Japan or in any of the ports of Japan on Mexican vessels than are or may hereafter be payable in like cases in the same ports on vessels of the most favored nation.

Art. VII. No other higher duties shall be imposed on the importation into the United Mexican States of any article the growth, product or manufacture of Japan, and reciprocally no other or higher duties shall be imposed on the importation into Japan of any articles the growth, product or manufacture of the United Mexican States than are or shall be payable on the importation of like articles the growth, product or manufacture of any other foreign country. Nor shall any other or higher duties of charges be imposed in the territories or possessions of either of the two contracting parties on the exportation of any article to the territory or possessions of the other than such as are or may be payable on the exportation of the like article to any other foreign country. No prohibition shall be imposed on the importation of any article the growth, product or manufacture of the territories of either of the contracting parties into the territories or possessions of the other which shall not equally extend to the like article being the growth, product or manufacture of any other country. Nor shall any prohibition be imposed on the exportation of any article from the territory of either of the contracting parties to the territories or possessions of the other which shall not equally extend to the exportation of the like article to the territories of all other nations.

Our own country has the option of accepting a treaty substantially the same in purpose and effect, whenever Congress shall see fit to act definitely upon the overtures already submitted by the Japanese Government.

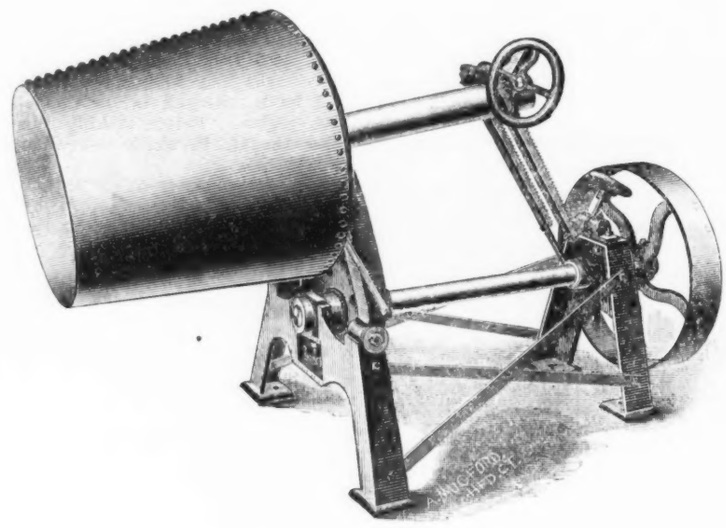


Fig. 2.—Emptying Position.

Encouraged by a more stable Government, business in Mexico is steadily improving. Planters are introducing modern methods of cultivation, new mills and factories are in process of construction in almost every State of the republic, and the banks are giving more liberal aid to the commercial community. Thus for the first time in the business history of Mexico there is a free movement of money and a legitimate expansion of trade.

Dredging on the Cape Cod Ship Canal has been resumed. The excavation thus far extends about one mile inland and is 16 feet deep. The treasury is reported bankrupt, but this, it is said, will not affect the company.

MANUFACTURING.

Iron and Steel.

On the 11th inst. a charter was granted to the Sterling Steel Company, of Pittsburgh, with a capital stock of $250,000, all paid in and unassessable. This concern will succeed the Sterling Steel Company, Limited, of that city. The officers of the new company are as follows: C. Y. Wheeler, president; C. W. Mackey, vice-president; A. S. Beymer, treasurer; John S. Lyon, secretary. It is not the intention of the company to enlarge their present works, but they will at once be put in good condition. One of the objects in forming the new company was to purchase the plant at Demmler Station, which heretofore had been operated under lease, and also to furnish abundant capital to pursue the manufacture of a high grade of tool steel, which is the only kind of steel made by this company.

Last week Jones & Laughlins, Limited, proprietors of the American Iron and Steel Works, at Pittsburgh, and Zug & Co., Limited, proprietors of the Sable Iron and Nail Works, of that city, signed the Amalgamated Association scale. This leaves but three firms in the Pittsburgh district that have not signed—namely, A. M. Byers & Co., Pittsburgh Forge and Iron Company and Shoenberger & Co.

On Saturday, the 6th inst., Fannie Furnace, at West Middlesex, Pa., operated under lease by the Wheeler Furnace Company, of Sharon, Pa., produced 114 tons of No. 1 foundry iron. As the furnace is only 12½ x 60 feet, the output is certainly remarkably large.

Hannah Furnace, of the Mahoning Valley Iron Company, at Youngstown, Ohio, was blown out on the 6th inst. for repairs. As soon as these are completed the furnace will resume operations.

The nail factory of the Riverside Iron Works, at Wheeling, W. Va., is not running full time at present, only 89 machines being in operation out of a total of 224. All other departments of the company's plant are in full operation.

Conestoga Furnace, owned and operated by Peacock & Thomas, at Lancaster, Pa., was blown out on the 3d inst. for repairs, after a very successful blast of six years and seven months. As soon as repairs are completed the furnace will be put in blast again.

The main structure of the new works of the Youngstown Bridge Company, at Youngstown, Ohio, will be 75 x 30 feet, with a wing 60 x 105 feet. Several smaller buildings will also be erected. Orders are now being received by the company, and they expect to commence business about September 1.

James W. Friend, of Pittsburgh, and Ralph Wick and Lloyd Booth, of Youngstown, Ohio, who are the owners of the Middlesex Rolling Mill, at West Middlesex, Pa., visited Peoria, Ill., last week, with a view of removing the plant to that place. A proposition made them by the citizens is now under consideration.

The Catasauqua Mfg. Company, of Catasauqua, Pa., have increased the wages of all their employees 10 per cent., taking effect on the resumption of their works, which are now idle, undergoing repairs.

Cartwright, McCurdy & Co., of Youngstown, Ohio, signed the Amalgamated scale last week, and their rolling-mill plant is now in full operation.

The long-standing contest between the late firm of Graff, Bennett & Co., formerly iron manufacturers at Pittsburgh, but who made an assignment last year for the benefit of their creditors, and the banks of that city which held the firm's paper, has at last been settled. The plant of the Graffton Iron Company, at Leetonia, Ohio, has been purchased by the banks in question for the sum of $54,000. Immediately after the purchase the concern was leased for a term of two years to McKeefry & Hofius. The terms of this lease have not been made public, but it is understood they are very advantageous to the banks, who have been represented throughout the transaction by P. H. Miller, their trustee. McKeefry & Hofius are obligated to make repairs during the first year aggregating $18,000. The case of the banking institutions against Graff, Bennett & Co., whose paper they held, is well known and has been dragging along for the past two years in Pennsylvania and Ohio legal circles. The Graffton Iron Company, in which they were chief stockholders, was one of the best-paying establishments of its kind in the country, and it is thought that if the banks can secure suitable managers they will go into the iron-making business. This last deal is the result of a proposition and its subsequent rejection some weeks ago. The bank people have made a particularly lucky strike.

The blast-furnace of the Bellefonte Furnace Company, at Bellefonte, Pa., was put in blast on the 9th inst., after an idleness of three months. The stack has been relined throughout, and improvements to the amount of $20,000 have been made to the plant.

A charter was granted last week to the Clinton Iron and Steel Company, to be located in Pittsburgh. The capital stock is $3000, divided into 30 shares of $100 per share. The directors are Edwin W. Smith, Charles S. Crawford and Charles C. Morrow.

The Ellis & Lessig Steel and Iron Company, of Pottstown, Pa., have arranged satisfactorily with their men on the basis of a 16⅔ per cent. reduction in nail cutting and 10 per cent. in the nail-plate mill. This is a correct statement, the articles published in the daily papers being incorrect.

Benjamin Atha & Co. are erecting a Boulton ingot-casting apparatus at their steel-works in Newark, N. J. Sir George Elliott, who was interested with Cyrus W. Field in laying the first Atlantic cable, has purchased a half-interest in the Boulton patents for Great Britain, and he now has machines building for Vickers & Kemp and for Jessup.

Notices have been posted in Kurtz & Sons' Valley Iron Works, Worth Brothers' Viaduct and Brandywine Mills, and Huston & Sons' Iron and Steel Mills, at Coatesville, Pa., that a raise of 25 cents per ton will be paid hereafter in the puddle departments of their works. The former price paid was $3.25 per ton. The mills of the above firms are all running on full time. Kurtz & Sons contemplate erecting another large iron and steel mills in the near future.

The Reading Iron Works, which were recently purchased by the Philadelphia and Reading Railroad Company, will probably receive among their first contracts the construction of iron-work for the Reading Terminal Railroad, which will continue the Reading Railroad on elevated tracks into the heart of Philadelphia, to Twelfth and Market streets. It has not yet been decided when construction will actually be begun, but it has been determined to bring the legal points involved to an issue as soon as possible.

It is reported that a valuable bed of iron ore has been discovered in New York on the Oscar Satterlee farm, on the west branch of the Neversink, 12 miles from the Ulster and Delaware Railroad at Big Indian. The vein of ore is only 20 feet below the surface, and will run at least 20 feet thick. The ore has been tested, and runs about 65 per cent. in metallic iron. New York capitalists have visited the spot, and if on future investigation the bed of ore is found to cover a sufficient extent of territory to operate a mine, it is probable that a branch track to the Ulster and Delaware Railroad will be built to ship the ore to Kingston, where plenty of coal and limestone can be had for smelting purposes.

Work is in progress at A. & P. Roberts & Co.'s Pencoyd Iron Works, Philadelphia, on the superstructure of the new bridge which is to cross the Schuylkill at the falls, to connect the Philadelphia and Reading Railroad's main line with the Port Richmond branch, to accommodate the Baltimore and Ohio through trains to New York. The bridge is to be of iron, resting on stone piers and approaches, and will be what is known as a plate-girder bridge. Beginning at the western terminus will be a span 93 feet in length, extending from the junction with the main line over the West Park Drive to a pier near the river bank. The other spans will be in length as follows: One span 60 feet and six spans each 87 feet; the east-end span will be of stone, 80 feet in length, with an arch sprung across the East Park Drive. The west-end span will be covered with corrugated iron in order to conceal the trains, so that the horses below may not be frightened, and the bottom covered in to prevent sparks or grease from falling on the drive. The bridge will have a curve in its entire length of a fraction over 6° and will have two tracks.

Machinery.

The Council Bluffs Electric Light and Power Company are increasing their station, and have added two more Westinghouse standard engines, of 125 horse-power and 60 horse-power respectively. This order was placed after sharp competition from other builders.

The Baldwin Locomotive Works, at Philadelphia, recently sent to Robert H. Coleman, at Lebanon, Pa., a narrow-gauge locomotive which was designed, made and delivered within eight days after the order was received

The Page Belting Company, of Concord, N. H., have given another evidence of their enterprise in the adoption of a new method of putting up cut laces, which they call Kit Cut Laces. These are metallic-tipped strings, every one of which is marked and put up separately, and the whole put into chests or kits, carefully labeled on the inside of the cover showing what the box contains and giving directions for the use of the strings, describing the number of holes to be punched in a given width of belt, and stating what string to use for that belt, and in the same manner for all the belts that are in use in a factory or shop. The laces are put up in such range of assorted sizes as to make this combination the standard needed in the average workshop or mill. The convenience of these kits of cut laces and the economy of their use are partly due to the promptness with which a belt is laced after the old lacing wears out, for the man in charge knows just where to look for what is wanted, and no time is lost in rummaging about either to hunt up a knife to cut off a string or among different packages of cut laces often scattered in various places. In using these kits of cut laces the entire outfit is at hand.

The foundry and machine department of the Harrisburg Car Mfg. Company, of Harrisburg, Pa., report an exceptionally heavy business. The entire plant has been running day and night for the last two months. Their present large orders consist of 13 Ide engines, ranging from 40 to

200 horse-power; a 6000-gallon tank for the Standard Oil Company, and several of their new double-engine steam road-rollers. They have been manufacturing the improved or double-engine roller for about six months, and in two months have sold ten 12 and 15 ton rollers to the following cities: Springfield, Ohio (D. F. Minahan, contractor); Birmingham, Ala.; Kingston, N. Y.; Somerville, Mass.; Springfield, Mass.; Jonesville, Mich. (J. F. Smith, contractor); Scranton, Pa.; Louisville, Ky. (Louisville Steam Roller Company, contractors); Sault Ste. Marie, Mich., and Worcester, Mass.

The Continental Iron Works, of Brooklyn, have just shipped to Hammond & Coon, Lake Erie Boiler Works, Buffalo, N. Y., 16 of their celebrated corrugated boiler furnaces, to be used in the boilers of the new Old Colony steamer, for which this firm hold the contract.

The Champion Blower and Forge Company, of Lancaster, Pa., are meeting with a good demand for their specialties, especially the new upright self-feed drills and the improved blacksmith forges: the former are being turned out at the rate of 60 per week and the latter 25 per week. The new blacksmith forge is a great improvement in every respect, and possesses novel features that command attention from blacksmiths wherever it is seen. The plant for some time has been running 13 hours per day.

The National Pipe Bending Company, of New Haven, Conn., report the sale of over 40 National Feed-Water Heaters during the month of June, aggregating over 4500 horse-power. This number includes two of 500 horse-power each, one of 400 horse-power and one of 300 horse-power, all of which were for electric-light plants. They also report a very good trade in their specialty of manufacturing coils and bends of iron, brass and copper pipe.

The Empire Portable Forge Company, of Lansingburg, N. Y., have completed repairs to their foundry, and the machinery is nearly all in position. It is intended to start the works about July 20, and they will be fully equipped to manufacture all kinds of soft gray iron castings. Forty hands will be employed.

The National Pulley Covering Company, of Baltimore, have recently appointed McGown Bros., of San Francisco, as their Pacific Coast agents and the New Orleans Railway and Mill Supply Company, of New Orleans, as agents for Louisiana.

The Diamond Machine Company have been erroneously mentioned as having their main office at Boston, Mass. Their main office and factory are located at Providence, R. I. They have a Western office and repository at Chicago, but they have no Boston office.

Hardware.

The extent to which the wire mats made by the Hartman Mfg. Company, of Beaver Falls, Pa., are superseding the old-fashioned ones is shown by the fact that the company shipped mats last month to England, Ireland, Italy, Brazil, Australia and China.

G. & H. Barnett, of the Black Diamond File Works, Philadelphia, Pa., are making further additions to their very extensive plant. A new building is being put up to increase their file-cutting facilities, besides adding new engine, boilers, &c. They are running full time, and find it difficult to keep up with the demand for their goods.

The general office and factory of the Manhattan Silver Plate Company will hereafter be in Lyons, Wayne County, N. Y. It is stated that the large increase in their business during the last few years has compelled them to arrange for an enlargement of their manufacturing facilities, and their recent site in Brooklyn could not be used to advantage in making the contemplated changes. They have, therefore, secured at Lyons a factory building of sufficient size and admirably suited for their purpose. The salesroom in New York remains at No. 23 John street.

W. G. Avery, of the W. G. Avery Mfg. Company, Cleveland, Ohio, has just received notice from the United States Commissioner of Patents that his application for improvements in flush bevels and bevel protractors has been granted.

Miscellaneous.

The Shields & Brown Company, manufacturers of sectional insulated air coverings for steam-pipes, &c., at 240 and 242 Randolph street, Chicago, have placed H. A. Reeves in control of their office at Kansas City, Mo. He will have full charge of the sale of their goods throughout Kansas, Nebraska, Western Missouri and Western Iowa, and is also authorized to take contracts for supplying pipe and coverings throughout that territory. Mr. Reeves has been connected with the Chicago house for nearly two years, and is familiar with all the details of the pipe-covering business. The company will carry a large assortment of goods at their Kansas City store, and will be prepared to fill all orders promptly.

The Champion Iron Company, Kenton, Ohio, have recently been awarded the contract for the erection of 5000 feet of iron fence for the Buffalo City Cemetery, Buffalo, N. Y. They have also been awarded contracts for jails and jail cells at Williamsburg, Miss.; Sullivan, Ind.; Paris, Ill.; Live Oak, Fla., and Louisburg, N. C.

A successful experiment, of interest to miners, was made last week at the laboratory of the Joseph Dixon Crucible Company, of Jersey City, N. J. A piece of iron was used 10 inches long, 2 inches wide and $\frac{1}{16}$ inch thick. One-half of its surface was painted with Dixon's Silica Graphite Paint, the other half left unpainted. It was then suspended for several days in a bath of dilute sulphuric acid. The acid bath was much stronger than any sulphur-water met with in mining. Taking the iron from the bath, the unpainted part was found eaten off to about one-half its original bulk. The painted part did not sustain even the slightest blemish.

The Pennsylvania Construction Company, of Pittsburgh, have closed a contract with Charles Hickox for the iron-work on a new eight-story building to be erected at Cleveland, Ohio. The consideration is $51,800. A contract has also been made by the same company for the iron-work on the new Masonic Hall, at Altoona, Pa., for $6500.

The manager of the American Aluminum Company, Fred. J. Seymour, died at Findlay, Ohio, on the 12th inst., and the secret of making aluminium by his process is said to have died with him. About four years ago, as the result of years of experiments, Mr. Seymour, then a citizen of Detroit, secured patents covering processes for the manufacture of aluminium. He had little difficulty in inducing capital to take hold of the enterprise, and the American Aluminum Company was organized, with Gen. Russell A. Alger as president and Senator Palmer, of Michigan, as vice-president. The discovery of natural gas at Findlay caused the location of the laboratories there. The stockholders of the company are undetermined what to do under the peculiar circumstances in which they are placed, but will probably give some of their chemists full scope to endeavor to recover the lost secret.

THE WEEK.

Consul Herring, in Honduras, reports that an English company, under a concession from that Government, have determined to build an interoceanic railway across the isthmus at that point, and that the chief engineer, Lee Smith, assures the authorities that the work will be complete in three years. It is believed that this road will be self-sustaining and even profitable from the local freight alone within the first ten years, and before any other competitive interoceanic route can be established. The concession includes an enormous grant of lands

The Argentine Republic and Chili have signed a treaty of commerce providing for important mutual concessions, and it is expected that all customs duties on the frontier will be abolished, permitting a free interchange of commodities.

A school-book trust, of which Van Antwerp, Bragg & Co., of Cincinnati, are said to be the head, went into operation on the 15th inst. Harper & Brothers and the other prominent firms are included. Every agent and traveling salesman will be withdrawn, so that books will now be sold only at headquarters. The plea is made that large expenses will be cut off by this arrangement and school boards will not be subject to corrupt influences in selecting books.

The imports at Philadelphia show a remarkable increase during the last fiscal year, notwithstanding the recent difficulty in securing outward cargoes. The collector's report shows a total of duties collected amounting to $23,407,350, an increase of nearly $4,700,000 over those of the previous year. Philadelphia now expects to rank only second to New York as a port of entry. The value of imports has grown from $41,772,110, one year ago, to $48,527,397 during the past year, while the exports have increased in value from $28,733,415 for the year ended June 30, 1888, to $29,707,437 for the year just closed.

Collector Erhardt, of this city, denies that artisans landing at this port under contract for employment, attracted by advertisements in foreign papers, do so in violation of the law excluding contract labor.

Excavating the ship-canal at Manchester, England, is a formidable undertaking. Though the canal is only 35 miles long, there are about 200 miles of railway line laid down on or near its banks, and 150 locomotives are at work upon them to remove the soil dug out by 15,000 human and 80 steam navvies. One of the latter has been known to fill 650 railway cars, holding 4 cubic yards apiece, in the course of a day. The soil to be excavated comprises 50,000,000 cubic yards.

A colonization agent from the Republic of Uruguay is visiting manufacturers of agricultural implements in Detroit, Chicago, South Bend, Ind., Troy, in this State, and other points with reference to trade. The company he represents propose, under Government auspices, to build railroads from Montevideo toward the Brazilian boundary and attract colonists from Ireland and Italy, apparently in imitation of the policy of the Argentine Republic and Brazil, which has proved so successful.

France follows up England's large naval appropriations by calling for $11,600,000, to be available for building war-ships during the next five years.

All the outgoing steamers from New York and Boston for the next three months are secured to convey live cattle to Europe. Although export rates are high the trade is yielding a good profit.

Wire-Cable Welding by Electricity.

BY O. K. STUART AND A. M. BULLARD.

The Trenton Iron Company, of Trenton, N. J., have ordered machines of the Thomson Electric Welding Company, of Boston, Mass., for welding a special wire-cable of their manufacture. These machines will be of the most improved type built by the latter company, and will be capable of welding these cables up to 1¼ inches in diameter. The cable is of peculiar construction and is distinguished by high tensile strength, great flexibility and admirable wearing qualities, all of which are due to the remarkable construction and the quality of the material used in it. The cables are made of hard drawn low-carbon steel of great uniformity, and are of various diameters, but all constructed substantially in the same manner. The diameter of the pieces upon which tests were made was 0.908 inch. The construction of the cable is well worth description. It consists of four successive layers of wires with a single round wire for a core; looked at end view, it shows four concentric rings of different thicknesses with a fine single-wire core. The first or outside layer or ring is made up of 24 wires, cold drawn, and each wire fitting neatly and locking with the next adjacent. The next layer or ring consists of 19 wires which, when laid up against each other, make a complete circle whose outside circumference is equal to the inside circumference of the first layer. The third layer is made up of 12 round wires, the area of the cross-section of each of which is larger than that of any of the wires of which the last, or fourth, layer is composed, these being round also. The core is round wire, as stated above, and is as fine as any of the others. Each layer of wire has a direction of twist along the length of the cable opposite to the direction of twist of the next layer or layers, and the angle of twist of each layer is different from that of any other layer.

We have entered into these details minutely in order that the difficulties of solving the problem of welding the cable may be apparent. The solution involved unusual preparation of the ends to be joined, the employment of special devices and more than ordinary care in the operation of the welding apparatus, and it was only after considerable experimenting under the direction of Prof. Elihu Thomson had been done that the satisfactory results mentioned in the latter part of this article could be secured. The following absolute conditions had to be met: 1. It was necessary to provide means for preventing the individual wires from fraying outward when the endwise pressure used in the welding was applied. 2. It was necessary that the cable be gripped in such a manner as to prevent sliding movements of the wires with relation to each other. 3. An unusual preparation of the ends had to be made in order to accomplish, at least approximately, the individual welding of the wires composing the cable, so that in bending around a sheave the load strains might be distributed at this point in the same manner as at any other point. 4. It was necessary to have the ends of the wires at one terminal as nearly as possible in line with the ends of those in the other terminal. In order to prevent the fraying and expanding actions above mentioned it is found necessary to shrink mild steel or iron sleeves or collars tightly upon the cable close to the ends (about $\frac{1}{16}$ inch therefrom), and this arrangement is found effective in preventing the wires from sliding over each other when the pressure is applied in welding; but it also prevents the separate welding of the individual wires forming the cable, a difficulty overcome by special preparation of the ends of the cable—viz., by cutting grooves between the ends of the contiguous layers of wires, forming thereby a series of concentric circular grooves. This permits of a definite amount of "upset" of softened metal at the end of each wire, which must be allowed for, it being caused by the endwise pressure used in forcing the pieces together when the welding temperature is reached, and permitting also, therefore, the welding of the individual wires forming the cable. The ends of the separate wires can be brought exactly opposite each other by the exercise of ordinary care upon the part of the operator of the machine, and with these preparatory arrangements made the joining of the cable is a problem in plain butt-welding by electricity.

The great and peculiar strains to which cables are frequently subjected make it necessary that they possess high elastic limit and tensile strength, combined with extreme flexibility, and any method of joining cables which destroys these qualities would be useless as applied to such work. In experimenting, therefore, it was a matter of the first importance to determine the tensile strength and breaking loads of all welds made, and this was done either on a Riehle 100,000-pound testing-machine in the factory of the Thomson Electric Welding Company, at Lynn, or under the supervision of the United States Government on the Emery machine at the Watertown Arsenal.

The material of which the wires forming the cable are composed being steel, it is obvious that heat will anneal it if allowed to cool slowly, and it was necessary, consequently, to determine the respective tensile strengths of the unannealed and annealed cable. Tests made at the Watertown Arsenal with hydraulic clamps show the cable to have a maximum tensile strength of about 67,700 pounds per square inch, and this strength drops to about 50,500 pounds when the metal is annealed by heating to a temperature slightly below that of welding and allowing it to cool slowly.

If, therefore, welds are made which will stand a maximum load of 50,000 pounds or over a practically perfect result will be obtained, provided elasticity and flexibility are not destroyed.

The tensile tests of the welded cable give the most perfect results, the maximum tensile strength of the welded specimens averaging over 50,000 pounds, some specimens resisting strains as high as 53,000 and 54,000 pounds per square inch, which is over 80 per cent. of the maximum load stood by the unannealed cable.

Although it was found to be extremely difficult to obtain accurately the elastic limit, either in the unwelded or the welded specimens, yet the indications are that the ratio of elastic limit to maximum load in unwelded specimens is about that of the welded specimens.

Severe bending and twisting tests give similarly good results, the cable resisting bending back and forth many times over an angle of 180 degrees at the weld. In such cases the fractures are always irregular and away from the weld, and present a grey, fine granular appearance, all of which proves that the condition of the cable at the weld is approximately what it was originally.

The value of the electric process as applied to such work will be appreciated when it is considered that notwithstanding the difficulties encountered and the fact that groups of wires and not solid metal were united, over 80 per cent. of the normal strength is obtained in the electric weld, rendering it practicable to use it for many purposes heretofore impossible.

A number of prominent ship-builders and others interested have already volunteered to act as an advisory council for the managers of the affairs of the proposed International Maritime Exposition at Madison Square Garden, to open September 21.

Sale of the Otis Iron and Steel Works Confirmed.

The announcement from London of the sale of the Otis Iron and Steel Company, of Cleveland, to an English syndicate, is verified by the officers of the company. Negotiations leading up to the sale have been going on for several months past, and President Charles A. Otis and Treasurer Thomas Jopling visited London last February. The price paid for the works is $4,500,000. The deal does not include the American Works of Cleveland, nor the Solid Steel Company of Alliance, two other concerns owned by Mr. Otis and his associates. The securities of the new company will consist of $1,500,000 of 6 per cent. debenture bonds, $1,500,000 of 8 per cent. preferred shares, and $1,500,000 common shares. The affairs of the company will for the present be conducted by the old management. The Otis Iron and Steel Company was organized early in 1873 by virtually the same gentlemen who have sold out to the English syndicate. On July 5, 1873, the ground was broken and the first steel was produced in October, 1874. The capital stock at that time was $300,000, and operations were begun on a comparatively small scale. Prosperity followed the company from their incorporation. The works became more extensive with each succeeding year until they had the largest plant in America for the production of steel boiler-plates. The company confine their operations to the manufacture of boiler-plate and axles. A new forge has just been completed, and in another month they will have in operation the largest axle-making plant in the country. The Otis Works are now equipped with two Bessemer converters and a Siemens-Martins plant. The works take up nearly 25 acres of ground, and the land is covered with substantial brick and stone buildings.

The German Subsidized Steamship Lines.—A recent issue of *Kuhlow's* says: "The expectations which the friends of the subsidized steamship lines had formed of their success have been more largely realized in the second year of their existence than in the first. Quite apart from the fact that the results, which in the first year showed a loss of nearly 800,000 marks, in the second year only showed a loss of 50,000 marks, the statistical evidence of the traffic offers an interesting picture of the economical importance of the different lines. What is to be principally kept in view is the fact that both in regard to the homeward and outward goods carried by the two chief lines by far the greatest share fell to the senders and receivers in the home port. In the second working year the direct shipments from Germany to China and Japan and to the Australian ports have largely increased, and the shipments from the intermediate ports had consequently to be restricted. The East Asia line is relieved by the Australian line, as both follow the same route as far as Colombo. The far heavier traffic renders it possible for larger ships to be employed; two fast steamers will be placed on the Australian line at the end of the year. At the outset, as it was to be foreseen, the results have clearly shown that these lines have not furthered the interests of England and Belgium, which their opponents declared would without doubt be the case, but that, on the contrary, the goods sent by the German steamers represented so much withdrawn from English shipowners and commission houses. The capacity of the lines to develop is more than proved."

The Iron Age

New York, Thursday, July 18, 1889.

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Foreigners Buying American Works.

It appears that the absorption of American business enterprises by foreign capitalists is to be extended to iron and steel works. This was announced some time since on the authority of one who has been quite prominent in conducting negotiations for breweries, but the assertion was received with incredulity. The truth of the statement, however, has been established by the facts just made public with regard to the Otis Iron and Steel Company, of Cleveland, Ohio. Dispatches report that the works of this company, which make a specialty of steel plates, have been sold to an English syndicate for $4,500,000. Securities will be issued consisting of $1,500,000 in 6 per cent. debenture bonds, $1,500,000 of 8 per cent. preferred stock, and $1,500,000 common stock. The affairs of the new company will for the present be conducted by the old management. Those who are familiar with the details of the breweries reorganizations will observe the similarity in the course of procedure. The capitalization is very shrewdly arranged by the issue of three classes of securities, two of which bear a fixed rate of interest. Possibly in no other way could a property be so heavily capitalized and still make its ordinary stock an investment of any value.

The agents of English capitalists have been very fortunate in the selection of the Otis works with which to inaugurate their campaign on American iron and steel properties. We have no means of knowing how profitable these works are or have been, but it is a fair presumption that they have paid their owners most handsomely, inasmuch as the plant has been greatly enlarged since it was established in 1873. The product of the works has always had a high reputation, of which the managers have been deservedly proud, and which they have spared no pains to maintain. The continuance of the old management is evidently for the purpose of retaining the confidence of consumers, and is in keeping with the general shrewdness shown in these international transactions. With the possible financial results we have no special concern. The capitalization appears to be excessive, but we presume that is a matter which has been very carefully considered and that it is based on the past earnings of the works. It will be seen that profits of but $300,000 a year will pay the interest on the debentures, the dividend on the preferred stock and 6 per cent. on the common stock.

The investment of foreign capital in this country is no new thing that it should excite comment, but such investments are now being made in a new way. The element of speculation is to a great extent eliminated. Instead of buying an undeveloped property and sinking a great deal of money in it before making it productive, which was the old method, our foreign friends having capital to invest are seeking established enterprises of a profitable character and are buying them, thus securing immediate returns. They necessarily pay high prices for such properties, but their plan of capitalization apparently permits this to be done on quite an inflated scale. Owners of antiquated works or of unprofitable enterprises, who are struggling along from year to year barely making both ends meet, will doubtless hail with pleasure this appearance of foreign investors in iron and steel works, hoping to be able to unload their burden and in addition receive a handsome recompense for it, but they will probably be sadly disappointed, as we understand that a rigid investigation of earnings invariably precedes these latter-day investments. In quite a number of cases negotiations have been dropped because a satisfactory record could not be shown in this respect.

In some quarters a spirit of dissatisfaction is being manifested at the passage of the control of American works into foreign hands. This is quite natural, being merely an expression of national feeling which is more or less intense according to the individual temperament. But the necessity for any great degree of excitement in this matter has hardly arisen as yet. The purchase of profitable American enterprises cannot be pushed very far without causing an enhancement of values, which would check such transactions in the same way that an excessive demand for any commodity is finally checked. American capitalists are, in fact, already applying the lessons in finance taught them by the English purchasers of American breweries, and are purchasing and capitalizing other breweries in the same way. While a great deal of foreign capital may be invested in this country before the present movement is over, it is sure to run but a limited course, and there is no danger whatever of any considerable proportion of our iron and steel works properties passing under foreign control.

The *American Manufacturer*, of Pittsburgh, proposes to introduce an experiment of its own, in order to familiarize the American people with the processes involved in the manufacture of tin-plate. The opening of the exposition in Pittsburgh this fall is regarded as an auspicious time for the demonstration. A design has been prepared of an experimental tin-plate plant which it is proposed to erect in connection with the exposition. The necessary sheet-iron and sheet-steel to be tinned, it is expected, can be secured from mills in the neighborhood of Pittsburgh, so that the proposed plant will simply be used for coating the sheets. The plan prepared requires a ground space of 24 x 48 feet. The hearth is 6 x 18 feet, in a room 24 x 24 feet, giving a space on each side of the hearth, or tinning-room, of 24 x 12 feet; one of these spaces being occupied for the white pickle-room and the other for assorting and packing the plates. It is stated that a stack of this size would have a daily capacity of 30 to 40 boxes of IC 14 x 20 tin-plates, single turn. The experimental plant provides for the white pickle arrangement only, the black pickling being done at the sheet mills. The following list is given of firms who can furnish the black sheets for tinning: Kirkpatrick & Co., Leechburg, Pa.; Canonsburg Iron and Steel Company, Canonsburg, Pa.; Marshall Bros. & Co., Philadelphia; Alan Wood & Co., Conshohocken, Pa.; W. D. Wood Co., McKeesport, Pa.; Wallace, Banfield & Co., Irondale, Ohio; United States Iron and Tin Plate Company, Demmler, Pa.; Jennings, Beale & Co., Leechburg, Pa.; Apollo Iron and Steel Company, Apollo, Pa.; P. H. Laufman & Co., Apollo; St. Louis Stamping Company, St. Louis, Mo., and Republic Iron Works, Pittsburgh, Pa. Several other mills can probably furnish sheets of the same character. The cost of the experimental plant is put at $2000. The material necessary for tinning the plates, &c., will add about as much more to this cost. The *American Manufacturer* asks for contributions to carry on the experiment, appealing to the iron and steel producers of the country for the needful means.

New Railroad Mileage in 1889.

According to the authorities on new railroad mileage, the total length of track laid in this country in the first half of 1889 was from 1410 miles to 1522 miles. The first number given is the estimate of the *Railroad Gazette* and the second of the *Railway Age*. Taking either set of figures, the new mileage of the first six months of this year is less than half of the new mileage reported for the first six months of 1888. Comparing the two years by quarters, the falling off this year seems to have been in the same ratio both in the first and second quarters. The tide has not yet turned in the matter of new railroad construction, and the prospects are strongly in favor of a continuance of proportionate figures for the remainder of the year, which would make the new mileage of 1889, according to the *Railroad Gazette*, about 3500 miles. The *Railway Age*, however, is more elastic in its conclusions and decides that the new construction of 1889 will be somewhere between 3500 and 5000 miles.

Of the total amount of track laid in 1889, about one-half has been in the Southern States, and Mississippi shows the largest figures of all. Georgia makes a good second, North Carolina comes next, Tennessee follows, Texas is fifth, and Pennsylvania sixth, standing first among the Northern States. The average construction on each line of road was only from 12 to 14 miles, and but two companies laid as much as 40 miles. The railroad construction is thus shown to have been confined to short lines and branches. The character of the construction, therefore, indicates conservatism, but it hardly means the complete abandonment of speculative railroad-building which is argued in some quarters. The conservatism and the close study of local needs which have latterly led to the building of short lines only were forced by the situation. The decline in railroad earnings and the serious depreciation in the value of all classes of railroad securities caused new projects to be looked upon with disfavor in financial circles. But there is no dearth of new projects, and a number of them are exceedingly ambitious in their scope. As soon as railroad earnings improve they will be launched on the sea of public favor, and

another period of excessive railroad-building will ensue.

The light railroad mileage reported for this year is in entire harmony with the views expressed in these columns from time to time. Notwithstanding the buoyant predictions occasionally ventured by some of our contemporaries relative to railroad-building, we were impressed with the stern facts indicated by the limited demand for steel rails. This demand has latterly improved to an extent which causes hopefulness for the future among rail manufacturers, who have already been able to slightly advance their prices. Thus far, however, the increased call for steel rails has not been sufficiently heavy to indicate a decided revival in railroad-building for the last half of this year. According to the *Railway Age*, some of the Northern States will in this period add considerable mileage, "notably New York, Pennsylvania, Ohio, Michigan, Illinois, Minnesota and Washington, while almost every State and Territory has enterprises under way from which some new track may be expected, and the Southern States will still continue prominent." Taking the condition of the rail trade, on the other hand, it would appear that a slight increase, and only a slight increase, in construction is to be expected in the last half of the year, as compared with the first half. It is high time that the enterprises which are to add the "considerable mileage" noted above should place their contracts for rails if they are really to be laid this year.

British Indian Trade in 1888–89.

Covering an area of 1,382,624 square miles and having a population of 260,000,000, British India is by far the most valuable possession of England. From a commercial point of view it is of importance to all the leading trading nations, ourselves included—the more so as with a fertile soil it combines an infinite variety of climate. India is not only our greatest competitor in cotton, but is fast becoming so in wheat. It would, besides, be impossible to dispense with its indigo, shellac and linseed, as well as jute, while Indian tea is superseding Chinese tea in England and coffee from the Malabar Coast is quite popular. The only regret we have to express is that India, from which we import a large amount of goods, takes comparatively so few of ours, if we except petroleum, with which Russian has commenced to seriously compete. The official returns of Indian foreign trade for the fiscal year ended March 31, 1889, have just been published. The movement in merchandise, exclusive of Government importations, was as follows:

	1888–89.	1887–88.	1886–87.
Imports	£49,926,000	£46,789,000	£43,996,000
Exports of Indian produce	£69,490,000	£64,777,000	£63,682,000
Re-exports	3,252,000	3,076,000	2,640,000
Tot. exports	£72,742,000	£67,853,000	£66,322,000

These figures show an increase in imports of 6¾ per cent. and in total exports of 7¼ per cent. The movement in precious metals, counting the rupee in gold at 2/ and in silver at 1/6, was as follows:

	1888–89.	1887–88.	1886–87.
Gold imports	£3,119,000	£3,326,000	£2,834,000
Gold exports	305,000	244,000	656,000
Silver imports	£8,044,000	£7,942,000	£6,175,000
Silver exports	1,109,000	1,021,000	798,000

India has at all times been a great absorber of silver, but for some years past the natives have commenced to hoard gold likewise. The general imports of merchandise were composed as under:

	1888–89.	1887–88.	Increase and decrease.
Live cattle	£221,000	£192,000	£29,000
Food	5,604,000	5,625,000	21,000
Hardware	826,000	820,000	6,000
Metals	3,042,000	3,985,000	943,000
Machinery	1,737,000	1,350,000	387,000
Railroad material	1,869,000	1,933,000	64,000
Chemicals, drugs, dyes and tanning material	935,000	767,000	168,000
Oils	1,554,000	1,115,000	439,000
Raw material	3,085,000	2,958,000	127,000
Yarns and dry goods	26,205,000	23,356,000	2,839,000
Clothing	932,000	957,000	25,000
Other articles	3,916,000	3,721,000	195,000
Totals	£49,926,000	£46,789,000	£3,137,000

The Government imported besides £2,152,000 worth of railroad material, against £1,764,000 in 1887–88. Although India weaves cotton on a large scale, the above importation of dry goods embraced cottons to the following extent:

	1888–89. Yards.	1887–88. Yards.	1886–87. Yards.
Unbleached	1,347,149,000	1,180,175,000	1,356,279,000
Bleached	406,852,000	320,464,000	387,104,000
Colored	372,607,000	339,103,000	412,036,000
Totals	2,126,608,000	1,839,742,000	2,155,419,000

	1888–89. Value.	1887–88. Value.	1886–87. Value.
Unbleached	£11,969,000	£10,052,000	£10,952,000
Bleached	4,182,000	3,472,000	3,563,000
Colored	4,219,000	3,966,000	4,502,000
Totals	£20,370,000	£17,490,000	£19,017,000

The increase in yards was 15 per cent. and in value 16½ per cent., which is remarkable in a single year. The high price of copper caused a notable decrease of importation in 1888–89, only 98,490 cwt. being received, worth £422,000, against 532,635 cwt., worth £1,500,000 in 1887–88. The petroleum import statistics invite special attention:

	1888–89. Gallons.	1888–89. Value.	1887–88. Gallons.	1887–88. Value.
American	20,646,000	£694,000	25,038,000	£736,000
Russian	17,516,000	626,000	5,036,000	170,000

The Russians are making strenuous efforts to drive our petroleum out of the Indian market. The foregoing figures prove their growing success in that direction. The British Indian exports of merchandise were as follows:

	1888–89.	1887–88.	Increase and decrease.
Live cattle	£84,000	£101,000	£17,000
Food	18,635,000	17,873,000	762,000
Hardware	7,000	5,000	2,000
Metals	33,000	32,000	1,000
Chemicals, drugs, dyes and tanning material	11,689,000	11,337,000	352,000
Oils	323,000	353,000	30,000
Raw material	28,885,000	26,696,000	2,189,000
Yarns and dry goods	7,018,000	5,602,000	1,416,000
Clothing	85,000	73,000	12,000
Other articles	2,731,000	2,705,000	26,000
Totals	£69,490,000	£64,777,000	£4,713,000

Jute exportation has increased rapidly, having been as follows:

	1888–89.	1887–88.	1886–87.
Quantity cwt.	10,553,000	9,643,000	8,307,000
Value	£5,920,000	4,530,000	3,652,000

The exports of cotton and raw silk show a joint increase of £475,000. Both rape and linseed show some progress. Teak wood, being in great demand abroad for ship-building, gained 50 per cent., while hides, on the other hand, declined. Wheat fluctuated according to prices abroad and the area seeded; following are the export figures:

	1888–89.	1887–88.	1886–87.
Quantity cwt.	17,622,000	13,538,000	22,263,000
Value	£5,645,000	4,172,000	6,469,000

The distribution has been as follows, in thousands of cwt.:

	1888–89.	1887–88.	1886–87.	1885–86.	1884–85.
England	9,044	6,040	9,667	12,071	7,446
Belgium	2,478	596	2,493	2,661	1,738
France	3,137	2,559	2,803	2,145	3,312
Italy	1,125	3,074	5,212	1,218	701
Egypt	1,558	660	1,317	2,296	2,149
Other countries	180	609	861	669	486
Totals	17,622	13,538	22,263	21,060	15,831

Rice exportation shows a temporary decline:

	1888–89.	1887–88.	1886–87.
Quantity cwt.	22,768,000	28,148,000	26,460,000
Value	£5,884,000	6,918,000	6,573,000

That of coffee, sugar and spices, on the other hand, augmented. Indian tea is almost exclusively shipped to England and Australia; its export expands rapidly:

	1888–89.	1887–88.	1886–87.
Quantity, pounds	97,011,000	87,515,000	78,703,000
Value	£3,950,000	£3,880,000	£3,546,000

In the item of twist (cotton yarn) India ousts Manchester out of the Eastern markets. The export was as follows:

1888–89.	Pounds.	Value.
China	101,248,000	£3,053,000
Japan	23,143,000	703,000
Other countries	4,516,000	149,000
Totals	128,907,000	£3,905,000

1887–88.	Pounds.	Value.
China	92,571,000	£2,448,000
Japan	17,391,000	508,000
Other countries	3,489,000	102,000
Totals	113,451,000	£3,058,000

The increase in weight was 13½ per cent. and in value 27 per cent. While the spinneries exhibit this handsome gain of exportation, China has taken more cotton goods. Gunny bags rose from £788,000 in 1886–87 to £1,218,000 in 1887–88 and £1,800,000 in 1888–89; Australia consumes them freely.

The American trade exhibits the figures below:

Calendar year.	Import into the United States.	Domestic export to India.
1888	$18,818,399	$3,514,556
1887	17,901,130	3,484,705
Increase	$917,269	$29,851

Our direct trade being limited to sailing vessels and the distance great, it is difficult to compete with European shippers who enjoy communication by swift steamships via Suez.

Monster Trusts.

That latest and most anomalous of all the fungus growths of Wall street, known as trust combinations, is suddenly discovered to have acquired proportions of such magnitude as to excite mingled surprise and apprehension. Not at any time since trust certificates became prominent in the speculative market was it possible to learn how many were outstanding, or whether there was any limit to their possible issue, although transactions have continued on an enormous scale. This sort of "blind pool" hitherto existing has at last been brought to the light of day through the efforts of officials of the New York Stock Exchange, who, seeing that their business in securities of the more solid class was being crowded to the wall, succeeded in obtaining from the registers of the various trusts the desired information. The biggest one of all turns out to be one of the newest of the family—the Lead Trust. It was the information concerning this trust that provoked more astonishment than anything else. Its officers sent word that there had been issued 830,188 certificates of the par value of $100 each, or

that these certificates represented a capitalization of $83,018,800. Less than two months ago it was known that the capital of this trust was about $32,000,000, and this exposure of an increase of over $50,000,000 in its capital in so short a period was a startling revelation. Within the period referred to the managers of the Lead Trust, who are also the managers of the Standard Oil Trust, have absorbed the white lead companies in Philadelphia, two in St. Louis—the Collier and the Southern—and the Atlantic Mills in Brooklyn. For each of these they have issued new certificates, and increased their capital stock to the amount represented by the addition of these new certificates; but it seemed incredible that these five or six companies were worth $50,000,000 or anywhere near it.

The leading trusts found among the unlisted securities dealt in at the exchange are shown to be as follows:

Name of trust.	Number certificates.	Total capital.
Lead	830,188	$83,018,800
Sugar	498,565	49,856,500
Cotton-Oil	421,852	42,185,200
Distillers' and Cattle Feeders'	307,266	30,726,600
American Cattle	133,961	13,396,100
Total	2,191,832	$219,183,200

It is stated by the chairman of the Committee on Unlisted Securities that under the rules the companies whose shares are quoted are not called upon to make any statement to the Stock Exchange other than that which they furnish voluntarily. Thus it appears that persons who henceforth assume risks of the character here referred to do it at their own cost, and that when the inevitable disaster overtakes them it will be in vain to look for sympathy. The Standard Oil Company is credited with being the prolific parent of all these unwieldy monsters, besides giving birth to scores of others of less pretension; but this institution having never been constrained to ask recognition by the exchange, it is enabled still to maintain a mysterious *incognito*, doing business in its own way and declaring dividends which a Crœsus might envy. Eventually the anti-trust laws being enacted in nearly all the States, from Michigan to Texas, will form a barrier to this sort of enterprise not easily overcome.

Commerce of Lake Superior.

An official statement is published of the traffic of the Sault Ste. Marie Ship Canal for the fiscal year ending June 30, showing that the enormous tonnage passing through the gate-way of Lake Superior constantly gains in magnitude. This statement is as follows:

Number of vessels	8,832
Number of lockages	4,390
Registered tonnage	6,213,494
Freight tonnage	6,932,203
Total time locks in operation, hours	3,012
Average of lockages, minutes	4

The merchandise transported includes copper, 30,261 tons; iron ore, 3,414,859 tons; coal, 1,854,527 tons; flour, 2,157,973 barrels; wheat, 13,084,417 bushels; other grain, 2,117,604 bushels; salt, 207,000 barrels. The classification of vessels is as follows, compared for two years:

	1889.	1888.
Vessels	8,832	8,823
Propellers	6,002	5,632
Sails	2,319	2,330
Unregistered craft	469	817

This table shows that small craft are being displaced by vessels of a larger tonnage, chiefly propellers. Freight tonnage in 1889 was 6,932,203, as against 5,531,169 in 1888. The registered tonnage was 6,213,494 in 1889, as against 4,741,176 last year. The registered tonnage increased 1,471,518 tons; freight tonnage, 1,401,034. Iron-ore tonnage increased 1,086,514; coal, 149,238; flour, 512,737 barrels; lumber, 87,953,000 feet. Wheat dropped off 8,942,752 bushels, caused probably by small crops in the Northwest, increased tonnage of flour and construction of railroads from the West to the seaboard. The Fourth of July was the biggest day for freight tonnage the two locks have ever had since they were constructed. The record was 67,224 tons.

The Homestead Strike Ended.

On Wednesday morning of last week Carnegie, Phipps & Co., Limited, of Pittsburgh, proprietors of the Homestead Steel Works, at Homestead, Pa., caused advertisements to be printed in a number of journals in different parts of the country for the purpose of securing workmen to take the place of their former employees who refused to resume work at the terms embraced in the scale recently submitted by the firm. Included in these advertisements was a statement showing what would have been the earnings of the men during the month of May last had the scale been in operation. This statement was published in our issue of the 27th ult. As soon as this move was taken the old employees realized that the firm had declared their positions vacant and were preparing to fill them with new men. A meeting of the officers of the Amalgamated Association and representatives from the lodges at the Homestead Works was called at once and a policy of action was outlined. This included a determination to prevent at all hazards any workmen from going into the mill and taking the positions of the strikers. In the meantime the call of the firm for new hands had not been without fruit, and the day after the call was issued almost 100 men were secured and placed on board a train bound for Homestead. On the arrival of the train at the works it was met by a body of the strikers, numbering over 3000 men, who immediately gathered around the new men and threatened them with violence if they did not immediately return to Pittsburgh or wherever they had come from. This had the desired effect and the men left Homestead at once, the majority of them returning to Pittsburgh. As soon as the firm saw that the strikers would not allow the men to enter the works a call was made on the Sheriff of Allegheny County for protection. That official immediately secured 100 deputy-sheriffs and proceeded to Homestead with them. Upon his arrival there the Sheriff posted a proclamation commanding all persons to abstain from assembling and congregating and interfering with Carnegie, Phipps & Co., Limited, or the operation of their works.

The arrival of the Sheriff and the posting of this proclamation served to intensify the bitter feelings of the strikers, and it was feared that a riot would take place. The situation remained in this condition until Saturday morning last, when, through the efforts of Sheriff McCandless, a conference was arranged to take place between the firm and the officials of the Amalgamated Association for the purpose of trying to secure a settlement of the trouble. The conference convened in the office of Carnegie, Phipps & Co., Limited, at Pittsburgh, on Saturday afternoon and continued for over nine hours. The firm were represented by Chairman W. L. Abbott and H. M. Curry, while the Amalgamated Association were represented by President William Weihe, Secretary William Martin and several other union officials. The conference adjourned about midnight, when the following statement was given out as to the action taken by those present: "The result of the conference is that certain essential points have been agreed to. Other matters of importance remain for discussion. The conference will continue next week."

The conference was resumed again on the morning of the 14th inst. and lasted until late in the evening. At the close of the conference Chairman W. L. Abbott stated that everything had been satisfactorily settled, and that work would be resumed the next (Monday) morning. Both sides had made concessions and the firm was perfectly satisfied. The new scale contains some very material reductions, but these are only in wages of high-priced men. The wages of the laborers are not disturbed; Chairman Abbott further stated that the report that the firm had cabled to Mr. Andrew Carnegie, who is in Paris, asking for instructions is not true. Before his departure for Europe Mr. Carnegie left the entire matter in charge of Chairman Abbott and other members of the firm. The following memorandum of agreement was drawn up and signed by the firm and Conference Committee of the Amalgamated Association on the 15th inst. It reads as follows:

BASIS OF AGREEMENT.

Memorandum of agreement between Carnegie, Phipps & Co., Limited, and the Amalgamated Association of Iron and Steel Workers, covering the Homestead Steel Works, made this 15th day of July, 1889, A. D.

1. Period of time agreed to for the coming three years.

Period of time agreed to from July 1, 1889, to July 1, 1892.

2. The rates, when agreed to, to obtain for six months from July 1, 1889, to January 1, 1890, and the average selling price to be the basis upon which the wages shall be paid for the next three months. The rate to change every three months thereafter, based upon the average selling price of the preceding three months.

The standard grade four-by-four Bessemer billets to be the basis of price.

A committee to be appointed consisting of three members of Amalgamated Association, national officers, and three members of the firm to determine the average selling price each period, and, in the event of these six men not agreeing, a seventh disinterested party to be chosen by them, whose decision shall be final.

All day labor, except common labor, to be paid the same rates as were paid prior to July 1, 1889, and not be included in the sliding scale.

The following classes of labor shall be included in the three years' agreement at existing wages for the whole term:

All engineers, all water-tenders, pressure-pump men, traveling cranes, narrow-gauge locomotive engineer, river-pump men, millwright, gas-tender and stocking-gang for blooming mill.

The wage-scales for the different departments having been considered and agreed upon, copies of the same are furnished herewith to each party.

The foot-notes on last year's scales are to be applied to the new scales.

It was decided that for the six months commencing on July 1, 1889, the wages should be paid on a basis of $26.50 as the selling price of Bessemer 4 x 4 inch steel billets. This will be in force until January 1, 1890. The committee of the Amalgamated Association and the members of the firm will then determine the average selling price for Bessemer steel billets for the six months commencing July 1, 1889 and ending at the commencement of the new year. The wages for the first three months of the year 1890 will be gauged by the average selling price fixed by the committee. At the expiration of the term of three months, the basis for the following three months shall be the average selling price for steel billets for the three preceding months. The minimum price is $25. The basis shall never fall below this amount, but may be as high above this sum as the market may carry it. Work in preparing the new scale was commenced at once and it will be ready for distribution in a short time. It is

understood that the principal reductions were made in the scales for the 23-inch, 33-inch and 119-inch mills, while the wages in the converting, blooming, armor, plate and basic mills were only slightly disturbed. It was also agreed that all the men who were in the employ of the firm when the mills closed, whether members of the Amalgamated Association or not, should be given their old places. The settlement of this trouble, which threatened to develop into one of the most bitter conflicts that ever took place in this country, has given great satisfaction, not only to those directly interested, but also to the general public. To those who were instrumental in bringing about a settlement of the trouble much praise is certainly due.

The Decauville Works at Petit-Bourg.

(*Editorial Correspondence.*)

[In last week's report of the doings of the engineers in Paris reference was made to a visit to the Decauville Works. We have pleasure in presenting a description of these famous works.]

The Decauville Works were started by Amand Decauville, whom high prices for beet-root distilling plant forced to manufacture his own machinery as early as 1854. Subsequently he and his eldest son, Paul Decauville, added to their large farming interests which had been in the family for centuries a steam-plow business and stone quarries. The necessities of these operations led Paul Decauville in 1875 to portable railroads, and in 1878 he first came before the general public through the Paris exhibition of that year as a manufacturer of this specialty. He built new works more conveniently located for railroad transportation at Corbeil, which now turns out at an average rate of 120 tons a day portable track, cars for freight and passenger service and locomotives. About 5000 miles of narrow-gauge portable track, with its equipment, has been turned out at Petit-Bourg. The rails are 9, 14, 19 and 24 pound sections, the track being made up in lengths ranging from 4 feet to 16 feet, the plan followed being to make the weight of the built-up sections of permanent way so light that one man can easily handle the lighter types, while only two men are required for transporting a complete length of the heavier forms. The rails are cut to lengths by cold saws. They are held in place by iron or steel sleepers, of different form, according to the weight and gauge of the permanent way, the latter varying between 15.75 and 29.3 inches. For heavier weights a steel sleeper 49 inches wide and 0.2 inch thick, turned over at the edges to a depth of 1.14 inches, is used, the ends being turned over to the same depth and rounded. Special machinery is used to manufacture these sleepers, of which six are required for every 16 feet of permanent way. Multiple drills are used for making the holes in sleepers and rails, and four large multiple riveting-machines are needed to attach the different parts together simultaneously. After the riveting is done and the lengths are completed with fish-plates and sole-plates to attach them together they are brought to very ingenious painting-machines. By a series of ducts the red lead with which they are to be covered is brought to a series of horizontal, vertical and inclined brushes revolving rapidly, the superfluous paint being removed automatically by wipers. Other parts of the plant produce the rolling-stock, and during the last ten years narrow-gauge locomotives have been manufactured. Since 1884 the production of portable bridges designed by M. Gustave Eiffel has been added to the specialties made, the heaviest piece weighing only 300 pounds.

After examining the engineers rode over a track on a steep grade, a part of which had been specially laid for their convenience, to the Château des Tourelles, a charming country-house originally built for Madame de Montespan. Now, like the works, it was gayly decorated with the Stars and Stripes. A collation was served and highly appreciated, and after a farewell on the lawn overlooking the Seine, the party returned to Paris, every lady bearing a bouquet as a *souvenir* of the hospitality of a progressive and prosperous French manufacturer.

It is reported that the Decauville road, which connects different parts of the Paris Exhibition, is a very successful enterprise. The profits on transporting about 40,000 passengers daily are about 3000 francs a day, or, roughly, one half of the gross earnings.

OBITUARY.

EDWARD BAILEY.

Edward Bailey, one of the founders of the Pottstown Iron Company, of Pottstown, Pa., and one of the best known iron-masters in Pennsylvania, died on the 6th inst., at the home of his son-in-law, Edgar S. Cook, in Pottstown, aged 64 years. He was a native of East Goshen, Chester County. At one time he held an interest in the Pottsgrove Iron Works; subsequently was one of the iron-manufacturing firm of E. & G. Brooke Company, at Birdsboro, and in 1864 purchased the interest of John E. Wootten in the rolling mill east of Pottstown, which afterward formed the nucleus of the extensive works of the Pottstown Iron Company. He enlisted the interest and financial encouragement of a number of Philadelphia capitalists, and in 1866 they together organized the Pottstown Iron Company, of which Mr. Bailey was for a number of years treasurer and general manager. In 1875 he withdrew from the company and became one of the leading members, a manager and the superintendent of the Glasgow Iron Company, of which his son-in-law, Comly B. Shoemaker, is president; his brother, Joseph L. Bailey, treasurer, and his son, Richard W. Bailey, secretary.

SAMUEL STANTON.

Samuel Stanton, formerly engaged in ship-building at Newburg, N. Y., died on the 16th inst., at Keyport, N. J., aged 53 years. He designed many elegant steam yachts, among them the Polynia and Namouna for James Gordon Bennett. In 1884 his firm failed.

MAURICE B. FLYNN.

Maurice B. Flynn, who died at Long Branch, N. J., on the 9th inst., commenced his business career as book-keeper for the iron firm of Guy C. Hotchkiss & Co., of this city, and gradually rose until he was admitted as a partner, in the year 1870. Soon after, becoming interested in politics, he was enabled to control various contracts given out by the municipal Government, thereby acquiring a large fortune. The following are many of the enterprises Mr. Flynn was interested in at the time of his death: Subway Company, Gatling Gun Company, Richmond (Va.) street-railway companies, Norfolk (Va.) Street Railway Company, Portsmouth (Va.) Street Railway Company, Steubenville (Ohio) Street Railway Company, a partner in the iron-manufacturing firm of Guy C. Hotchkiss, Field & Co., and interested in the Safety Light and Power Company. It is believed that he was also interested in a dredging contract and in other enterprises. He was less than 50 years of age.

PERSONAL.

Col. F. K. Hain, general manager of the Manhattan Elevated Railroad Company, New York, has accepted the presidency of the Julien Electric Traction Company.

Thomas V. Cooper, late State Senator, has qualified as Collector of the Port of Philadelphia.

Robert E. Masters has been selected to go to Paris by the Scripps League, to represent the foundry trade. Mr. Masters is widely known as a contributor to various trade-papers. He is now employed by the Marshall Car Wheel and Foundry Company, of Marshall, Texas. His employers continue his salary while he is absent abroad.

Col. Emmons Clark, long-time secretary of the New York Board of Health, has been appointed United States Consul at Havre.

Cornelius McKay, appointed an assistant inspector of hulls at this port, is a son of the late eminent ship-builder, Donald McKay.

Clifford J. Ellis, who has had charge of the Chicago office of the Cambria Iron Company for the past three years, has been promoted to the assistant treasurership of the company. He will remove to Johnstown, Pa., and assume his new duties in the course of a week or ten days. Mr. Ellis went to Chicago from the sales department in Philadelphia, and through his courteous and obliging disposition and business tact and ability soon estabished himself in the good graces of hosts of business and social acquaintances. While he will be missed by his many friends in Chicago and vicinity, none will fail to congratulate him on his promotion to so important a position, for which he is admirably adapted. George N. Ismon, who has filled the position of salesman from the Chicago office, will succeed Mr. Ellis as agent for the company from the 15th inst., and will retain the office in the Phœnix Building.

Commodore Slavin, president of the American Contracting and Dredging Company, who have already executed some large contracts on the Panama Canal, sailed for Paris on Wednesday to arrange with the new Panama Canal Company for the completion of the canal. It is intimated that the work to be done will cost $200,000,000.

W. W. Snow, general manager of the Ramapo Wheel and Foundry Company, Ramapo, N. Y., sailed for Europe on the 10th inst, to be gone two months.

J. M. Donahue, president of the San Francisco and Northern Pacific Railway Company, spent the past week in this city. Mr. Donahue is a prominent business man of San Francisco.

The great double-track steel bridge at New London, Conn., over the Thames River, will be opened for traffic next month, doing away with ferry transit. There are four spans to the bridge, extending over a distance of 460 feet on either side of the river. The great swing draw, which is said to exceed in size any ever built, is now being completed. It is 502 feet in length, with a clear water-way of 225 feet on either side of the center pier when thrown open. The spans of the draw are the most prominent feature of the work. The draw weighs about 2,400,000 pounds, and yet it is adjusted so nicely as to admit of its being turned in either direction and to make a complete revolution. It will sustain a live weight of 3000 pounds per foot of track. The superstructure of the bridge is wholly of steel, every piece of which has been tested. It is 1422 feet long. The foundations for the central pier of the bridge were successfully laid under a combined depth of mud and water of 130 feet.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., July 15, 1889.

Pig-Iron.—The immediate position is clear enough—viz., that furnaces are well sold up and that those who require Iron have to pay full quoted rates. The future, however, is somewhat obscure, so that even the most experienced men in the trade are undecided what position to assume. Meanwhile orders are taken at quoted rates as far as they are offered; but buyers for September and later are not willing to pay the figures asked. The consequence is that transactions are light and new business confined pretty much to small orders for immediate delivery, the larger consumers having some time ago covered their requirements for the next six or eight weeks. Neither side feel entirely clear in regard to the future, and for that reason they are waiting for developments. The demand for Finished Iron is not all that could be desired, so that consumers are inclined to hesitate until they can form some fairly correct idea of what their requirements will be later on. They are busy enough for the present on what may be called emergency work; but that may not last more than a few weeks longer, and then what? Inquiries are moderately satisfactory, but there is not enough to warrant very sanguine expectations. In plain terms, there is a degree of indefiniteness, which while it lasts must be inimical to any attempt at a further advance in prices. The continued large exports of gold, the great destruction by floods and storms, as well as the uncertainty in regard to crops, check what might otherwise be a very active demand. The other side of the case is that consumption is large, while stocks are light, so that under any circumstances holders feel that prices are not likely to decline, with a fair chance that things may yet take on renewed activity in the near future. Sales during the week have been on the basis of $17 @ $18 delivered, for No. 1 Foundry; $16 @ $16.50 for No. 2 and $15 @ $15.50 for Gray Forge. Southern Irons are nominally held at from $16.50 to $17 delivered, for No. 1 Foundry; $16 for No. 2 and $15 for Gray Forge, but there is nothing doing, sellers being quite as indifferent as buyers.

Blooms.—The market is still very much unsettled and prices hard to quote; in fact, Blooms and Billets have not been offered to any extent for two or three weeks past, owing to the unsettled condition of affairs in Pittsburgh. Now that the strike at Carnegie's is at an end, it is presumed that prices will not be much different to what they were before, viz.: $28.50 @ $29, delivered, for Nail Slabs; $30 @ $31 for Tank Slabs; $32.50 @ $33.50 for Shell Slabs; $36 @ $37 for Flange, and $38 @ $40 for Fire Box; Charcoal Blooms, $52 @ $54; Run-out Anthracite, $41 @ $42.50; Scrap Blooms, $32 @ $33 ℔ "Bloom" ton of 2464 lb

Muck-Bars.—Business has been light during the week, although prices are unchanged. Supplies are extremely limited, at $28.50 @ $29 asked for good Bars, but buyers appear to have covered their urgent requirements for the present.

Bar-Iron.—The market has not been all that manufacturers could desire, although there has been a fair demand at unchanged prices. But the expected advance has not materialized, which is a considerable disappointment, in view of the fact that everything else has had a rise. This is the more surprising on account of the absence of outside competition, but whether the advance is to come later or whether there is to be a reaction remains to be seen. The demand for Skelp-Iron is better, sales amounting to several thousand tons having been made during the week, with prospects of still further orders in the near future. Bars are, nominally, 1.80¢ @ 1.85¢, but prices are irregular and not very firm. Skelp has sold at from 1.75¢ to 1.80¢ for Grooved, and 1.95¢ to 2.05¢ for Sheared, but the feeling is firm and outside figures are asked on new business.

Plates.—The demand for Plates is well maintained, and there is no difficulty in securing business enough to run the mills (for the present) to their full capacity. There is less inquiry for late deliveries, however, and some are more inclined to accept business than they were a few weeks ago. Prices are steady, but as present contracts will be pretty well exhausted by the end of next month, there is a disposition to look around for desirable orders, so that the mills may continue on full time. Prices are about the same as last week, although the bulk of the business is done at medium figures, as follows: 2.1¢ @ 2.2¢ for Ordinary Plates and Tank Plates; 2.10¢ @ 2.25¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.25¢; Fire-Box, 3.7¢ @ 4¢; Steel Plates, Tank and Ship Plate, 2.2¢ @ 2.30¢; Shell, 2.5¢ @ 2.7¢; Flange, 2¾¢ @ 3¢; Fire-Box, 3½¢ @ 4¢.

Structural Iron.—The demand has not been especially active from the 1st of the month, the emergency work having been placed during June. There is a renewed inquiry, however, and there are good reasons for expecting great activity during the balance of the year. Some of the larger concerns say they have already work enough before them to last until the end of the year, so that there is no risk in predicting firmness, and possibly some difficulty in securing deliveries as promptly as desired. Prices firm at about the following figures, delivered, say: Bridge Plate, 2.10¢ @ 2.15¢; Angles, 2.10¢ @ 2.20¢; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 2.8¢ for Iron or Steel.

Sheet-Iron.—Plenty of business is reported at quoted rates. Mills are all employed to their full capacity and the outlook is decidedly encouraging to holders. Prices firm at the following figures:

Best Refined, Nos. 14 to 20	3¢
Best Refined, Nos. 21 to 24	3.20¢
Best Refined, Nos. 25 to 26	3.40¢
Best Refined, No. 27	3.50¢
Best Refined No. 28	3.60¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¼¢
Best Soft Steel, Nos. 21 to 24	3½¢
Best Soft Steel, Nos. 25 to 26	3¾¢
Best Soft Steel, No. 27	4¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount	65 %
Common, discount	67½ %

Steel Rails.—No large sales have been reported during the week, but near-by mills are all full of work, and quote $28 as an inside figure. Manufacturers express themselves as well satisfied with the outlook, and believe that there will be plenty of business during the fall months, and possibly somewhat higher prices than are now quoted. There are several important inquiries on the market to-day from which a good deal of business is expected to result soon.

Old Rails.—There is practically nothing doing in this market, holders' ideas being very high for the few that are in store. Shipments are offered at about $23, but buyers are not inclined to bid much over $22, although $23 @ $23.50 is realized at interior points.

Scrap Iron.—There is a good demand for desirable qualities, and sales are made without difficulty at about the following figures: $20.50 @ $21 bid, $21.25 asked, for cargo lots; $21 @ $21.50 for carload lots, delivered, or for choice, $22; No. 2 do., $14 @ $15; Turnings, $14 @ $15; Old Steel Rails, $16.50 @ $17.50; Cast Scrap, $15 @ $16; do. Borings, $9 @ $10; Old Fish-Plates, $23 @ $24; Old Car-Wheels, nominal, $17 @ $18, Philadelphia.

Nails.—There is not much change to notice in this department, the demand being only fair at about $1.90 for carload lots and $2 for lots from store. Makers of best brands seem determined to maintain prices, while some talk of a little advance in sympathy with other specialties

Wrought-Iron Pipe.—The demand is very satisfactory at unchanged prices. Mills are full of orders for some time to come, and prospects for the fall trade are of the most hopeful character. Discounts as last quoted, viz: Butt-Welded Black, 52½ %; Lap-Welded Black, 65 %; Butt-Welded Galvanized, 45 %; Lap-Welded Galvanized, 52½ %; Boiler Tubes, 60 %.

Chicago.

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, July 15, 1889.

Pig-Iron.—The market was less active last week. The heavy buyers have made their purchases; consequently furnace men have canceled special inducements to have consumers increase their orders, thus limiting trade to small lots and 30 to 90 days delivery. On Charcoal and Lake Superior Coke Iron prices are firm. Southern furnace men have difficulty in regulating prices for this market. Sales in the past four weeks were made on a freight basis of $3.65. Only a small proportion of this Iron has been delivered. The rate has now advanced to $4, and the railroads are unwilling to protect shippers on existing contracts. The change in rate does not affect immediate business, as prices asked in the last two weeks eliminated Southern Foundry Iron from this market. There is a demand for Silvery and cheap fillers, but makers ask more for these grades than consumers will pay when they can be dispensed with. The recent improvement in demand and prices has brought out several lots of Iron that were bought on speculation some months ago. Though not offered positively, it is probable that buyers could get this Iron at a shade less than the present asking price of the furnaces. The future course of the market is being very carefully considered by makers and sellers. The amount of Iron under contract, in a measure, insures the maintenance of present figures for a short time, but for late fall, winter and spring deliveries prices will be largely contingent upon the purchases of rolling stock made by railroads. Furnaces in the West heretofore making Foundry Iron over to Bessemer will be influential in the market price by reducing supplies. It is said that furnace men from Ohio who were here last week were figuring on Bessemer Pig, but the supposed buyers would not admit that they intended placing any orders. In the absence of further sales we renew our quotation of $16.50, cash, on Bessemer, f. o. b. Chicago, but the fact is pretty well established that Ohio Bessemer cannot be profitably laid down here at less than $17. On a cash basis Lake Superior Charcoal is quoted $18.50 @ $19; Local Coke, No. 1, $16; No. 2, $15; No. 3, $14; Chicago and Bay View Scotch, $15.50 @ $16; American Scotch, (Blackband), $17.50; Southern Foundry, No. 1, $16.50; No. 2, $15.50; No. 3, $14; No. 1, Soft, $15.50; No. 2, $14.75; Gray Forge, $14.50; Mottled, $13.50 @ $14; Tennessee Charcoal, No. 1, $17.75; Alabama Car-Wheel, $24 @ $25; Ohio Iron, Hanging Rock, No. 1, $18; Jackson County, No. 1, $17.50.

Bar-Iron.—While makers are beginning to look around for buyers, there is as yet no indication that they are offering any inducements. Jobbers and consumers have been testing the market, and $1.60 @ $1.65, half extras, f.o.b. Chicago, appears to be a pretty general price on Common Bars and $1.60 flat on car specifications. On Single Refined, $1.75 @ $1.80 is quoted, and on Best Refined, $1.85 @ $1.90. Jobbers quote from store on Common $1.70 @ $1.75; Single Refined, $1.85; Best Refined, $1.90 @ $1.95. Trade was only moderately active from store, and with the exception of the placing of an order for about 3000 tons by a harvesting-machine builder and several round lots from car-builders mill trade was quiet. Large consumers are evidently waiting the more active operations of mills before placing further orders.

Structural Iron.—Some one of the makers was fortunate enough to get an order for 1300 tons of Beams last week, but the balance of trade was in small lots for quick delivery. New specifications for bids are coming in all the time, and the quantity of work in sight is surprising even to those best informed on the possibilities. Quotations are as follows, f.o.b. Chicago: Angles, $2.10 @ $2.12½; Universal Plates, $2.15; Sheared Plates, $2.20; Tees, $2.55; Beams and Channels, $2.90. From store Angles are quoted at $2.20 @ $2.30; Tees, $2.65 @ $2.70; Beams, $3.40

Plates, Tubes, &c.—From the number of telegraphic and mail orders and inquiries received, it is evident that consumption is increasing and Plate stock rapidly diminishing. Consumers as far East as Albany have been writing to this market for Plate-Iron. Mills are full of work and firm in prices. Quotations are as follows, from store: Nos. 10 to 14 Iron Sheets, 2.60¢ @ 2.70¢; Nos. 10 to 14 Steel Sheets, 2.75¢ @ 3¢; Tank Iron, 2.40¢ @ 2.50¢; Tank Steel, 2.50¢ @ 2.60¢; Shell Iron or Steel, 3¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.50¢; Ulster Iron, 3.75¢; Boiler Rivets, 3.75¢ @ 4.25¢; Boiler Tubes, 55 % off for 1¾-inch and less and 60 % off for 2-inch and larger.

Sheet-Iron.—At the present rate of consumption there will not be nearly enough stock in this market to supply the demand of the next two months. Manufacturers refuse to book additional orders for delivery before the latter half of September, and are quoting on a basis of 3¢ for No. 27, at mill. Jobbers continue the quotation of 3.10¢ for No. 24; 3.20¢ for Nos. 25 and 26, and 3.30¢ for No. 27.

Galvanized Iron.—The condition noted last week is unchanged. The activity of sellers of cheap Iron is governed by the makers' ability to secure Black Sheets. Or, it might be more proper to say, Steel Sheets, as a very large proportion of the Sheets that are sold for Galvanized Iron are Steel. Manufacturers are bent on keeping their prices down, and it would seem that 70 % discount is more general than a week ago. Prices on the best qualities of Iron are firm and regular at 65 % on Juniata, and 65 % and 5 % off on Charcoal, out of store.

Merchant Steel. — The largest contract for Steel Bars made this season was placed on Friday last. Including all sizes of Bars and special shapes the order is said to be for about 800 tons. The figure at which this order was placed has not been made public. It is, however, by no means certain that the lowest bidder secured the contract, as the buyer aimed to place it with manufacturers who possessed the greatest ability and facilities to meet the requirements in shipments and quality. General trade in small lots from store continues active for Soft Steel, Tool Steel, Open-Hearth and Spring Steel at the following quotations: Mixed Machinery Steel, 2.10¢ @ 2.30¢; Tool Steel, 7.75¢ @ 8.50¢; Specials, 12¢ @ 25¢; Crucible Spring Steel, 3.50¢ @ 3.60¢; Open-Hearth Spring, 2.50¢; Open-Hearth Machinery, 2.50¢ @ 3¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Sheet-Steel, 7¢ @ 10¢; Tire Steel, 2.20¢ @ 2.25¢. Manufacturers continue to quote, f.o.b. Chicago, in round lots: Open-Hearth-Machinery Steel, 2.10¢; Tire Steel, 2.15¢; Toe-Calk, 2.25¢; Spring Steel, 2.25¢; Soft-Steel Bars, 1.90¢; Open-Hearth Plow Stock, 2.50¢; Crucible Plow Stock, 3.50¢.

Steel Rails.—Consumers who buy in this market and have not yet placed their orders stand a very slim chance of having deliveries made before the last two months in the year. The full capacity of the Illinois Steel Company will be employed this week, when the North Chicago mill will be changed from Beams to Steel Rails. Judging by the amount of work under contract and inquiries at hand, they will have work enough to keep all the mills in operation the remainder of this year. They continue to quote $29.50 @ $30 on heavy sections, $33 @ $34 on 30-lb, and $1.75 @ $1.80 ℔ 100 lb on 12-lb and 20-lb Rails.

Track Supplies.—There was some improvement in the inquiry for Splice-Bars, Bolts, &c., last week. The majority of the orders apparently go with the order for Rails, and we hear numerous complaints from the manufacturers who make a specialty of these articles that business continues very quiet. Many of the railroads have stock on hand which has been carried over from last year. Splice-Bars are now quoted at $1.60 @ $1.70; Bolts with Square Nuts, $2.50 @ $2.55; Hexagon Nuts, $2.60 @ $2.70; Spikes, $1.85 @ $1.90.

Old Rails and Wheels.—The immediate wants of buyers are pretty well supplied, and the market consequently is less firm than it was in the last two weeks, when nearly all the mills were making inquiries for Rails. Sales of several small lots are reported at $21.75, and it is probable that stock can be had at $21.50. Sellers are making more inquiries for buyers, and show a disposition to realize, notwithstanding that they are asking as much as $22.50 @ $23. There were no transactions in Old Steel Rails, and prices are nominally $17 for long lengths and $15 for short pieces. There is a good demand for Old Car-Wheels, for which buyers are offering $17.50 @ $18. Sellers continue to demand $18.50, and it is said that this price was realized on a small lot, but it could not be confirmed.

Scrap-Iron.—The demand for Scrap last week was very light. There were a good many inquiries for late July and August deliveries, on which dealers ask 25¢ @ 50¢ ℔ ton more than present price. Dealers make the following quotations ℔ ton of 2000 lb: No. 1 Forge, $18; No. 1 Mill, $14; No. 2 Mill, $9.50; Horseshoes, $17.50; Car-Axles, $21.50; Wrought Turnings, $11; Cast Machinery, $11.50; Stove Plate, $8.50; Cast Borings, $8; Leaf Steel, $15; Coil Steel, $14; Locomotive Tires and Track Scrap, $16; Mixed Country Wrought, $12 @ $13.

Hardware.—The leading jobbers express surprise at the continuance of the enormous business they have been doing. It was generally supposed that after the 4th of July trade would fall off, and give members of firms and salesmen an opportunity to take their annual vacation. So far this month business has required the entire force of the respective houses to enable them to keep up with the orders. The demand covers all classes of goods, and is especially heavy for Builders' Hardware, Tools and every description of Farming Utensils. The Cutlery trade is improving, and numerous inquiries are made for early fall delivery, and a good many orders already placed. Jobbers say they have never had a better prospect for fall business. Prices are steady and firm and on many lines there are strong indications that slight advances may be asked on some articles by the close of this month.

Nails.—Dealers who have large stocks of Nails on hand are inclined to be jubilant over the action of the manufacturers in advancing prices. Inquiries from about 15 different mills warrant the quotation of $1.70 rates at mill on Cut Steel Nails. It is doubtful whether this price can be shaded by the best buyers. In carloads and mixed carloads jobbers quote $2.30 for Wire, and $1.85 for Cut Nails. In small lots out of store jobbers are selling Cut Nails at $1.90, and claim that they will not deviate from this price under any circumstances to city trade. Wire Nails are quoted at $2.35 in small lots. There is quite an active trade in both classes, both in small and large lots, from country consumers. Wire Nails are, perhaps, not quite so firm, but manufacturers are not inclined to shade prices to any extent. It is probable that they would sell in large lots at $2.25, f.o.b. Chicago.

Barb-Wire.—Business is rather quiet from mill. Jobbers are doing only a small trade from store, on which they quote 2.75¢ for Painted, 3.35¢ for Galvanized. Manufacturers are now endeavoring to make up stock for fall trade, and the majority of the mills are working the greater portion of their capacity. They are not endeavoring to sell Galvanized, but it is said there is some Painted Wire being offered at a slight discount from regular prices. This Wire is in the hands of a manufacturer whose demand has been very largely for Galvanized.

Pig-Lead.—There was considerable falling off in the Pig-Lead trade last week. About 300 tons changed hands at prices ranging from 3.80¢ to 3.85¢, July delivery. The break in prices was unexpected, and has caused a cessation in transactions. Conservative buyers will not anticipate their wants, preferring to wait until the duty question on Mexican Ore is settled.

Messrs. H. R. Durkee & Co., 115 Dearborn street, have been appointed general sales agents for the Elk Rapids Iron Company in the territory west of Ohio. The Elk Rapids is one of the best-known brands of Lake Superior Charcoal Iron, and has long sustained a very high reputation among the manufacturers of Malleable Iron and Car-Wheels. Any inquiries addressed to the agents will receive prompt attention.

Cleveland.

CLEVELAND, July 15, 1889.

Iron Ore.—There has been an almost unprecedented demand for Ore during the past six or seven days, and in a few instances buyers have not hesitated about paying prices slightly in advance of last week's quotations. Bessemer Hematites are said to have been sold during the week at $5 @ $5.15, lower lake delivery, and Menominee Bessemers at $4.75 @ $5.10, while Gogebic Bessemers at $4.65 @ $5.10 were quite eagerly taken. Many dealers place the week's sales at 100,000 tons and estimate the total purchases of the furnace men to date at 5,000,000 tons. It is the generally prevalent opinion among the Ore men representing the important mines that the season's output will not fall below 6,500,000 tons, about 750,000 tons of this amount going to furnaces that have hitherto purchased foreign Ores almost exclusively. The mine-owners have found themselves short of saleable Ores earlier than usual in the buying season and are taking quick advantage of the

situation. There are excellent prospects of an 80¢ rate for bringing Ores from Escanaba, with a corresponding reduction to $1 from Marquette and $1.15 from Ashland and Two Harbors.

Pig-Iron.—The market continues to display remarkable vitality, despite discouragingly-low quotations. The demand for Iron, both for present and future needs, is persistent and emphatic, and this inquiry is in no way affected by the firmer feeling about prices. Future needs are heavy factors in many recent transactions. Reports of a scarcity of Iron in the East encourage local dealers to believe that the long-contemplated advance in quotations cannot be much longer delayed.

Scrap-Iron.—The demand for Old American Rails is improving and several sales at $21.50 have occurred. Old Axles are also in demand and a few lots of Old Wheels are said to have been sold at $19.

(*Special to The Iron Age, by Telegraph.*)

The remarkable demand for Ore continues. The sales of the past three or four days comprise 40,000 tons of non-Bessemer Hematites at $3.75 @ $4; 20,000 tons of non-Bessemer No. 1 Specular at $4.50; 25,000 tons of Menominee and Hematite Bessemers at $4.50 @ $5, and about 30,000 tons of Gogebic Bessemers at $4.75, all f.o.b. vessels lower lake ports.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave.
PITTSBURGH, July 16, 1889.

The great event of the week here was the settlement of the strike at the Homestead Steel Works of Carnegie, Phipps & Co.; the settlement, which was brought about by concessions being made on both sides, was unexpected, but is received with great satisfaction not only by parties directly interested, but by the public at large. In regard to the general position of the Iron and Steel trade reports are encouraging. Nearly all the mills in this district, as well as throughout the West, have signed the wage-scale, and those that have not started up will do so as soon as repairs are completed. The indications for orders never possibly were better at this season of the year. It looks now as if there would be full employment for all the Iron and Steel making capacity of the country during the remainder of the year. Notwithstanding that it is the middle of July, we continue to have good river navigation, a most important matter to our manufacturers.

Pig-Iron.—There is a fair degree of activity, and the feeling is stronger than it was a week ago. Consumers are more disposed to buy, while furnace men are less inclined to sell; but for this the volume of business would be much larger than it is. The feeling obtains generally that higher prices will prevail in the near future. Furnace men are refusing to contract for future delivery at present prices. Moreover, a good many furnaces in this district are sold ahead; some of them have orders on their books that they would like to cancel if they could. We quote prices as follows:

No. 1 Gray Forge	$14.00 @	$14.15	cash
No. 2 Gray Forge	13.65 @	13.75,	"
All-Ore Mill	14.75 @	15.00,	"
White and Mottled	13.00 @	13.50,	"
No. 1 Foundry	16.00 @	16.25,	"
No. 2 Foundry	15.00 @	15.25,	"
No. 3 Foundry	14.50 @	14.75,	"
No. 2 Charcoal Foundry	21.00 @	21.50,	"
Cold Blast Charcoal	24.00 @	27.00,	"
Bessemer Iron	16 00 @	16.25,	"

We can report a sale of 2000 tons of Bessemer for July, August and September at $16.25, cash, and there is a rumor of a sale of 10,000 tons having been effected at the same price. Some of the brokers now say that they have no Bessemer to sell under $16.50, cash. While as yet there have been but few sales of No. 1 Mill Iron above $14, cash, it is doubtful whether it could be bought now under $14.25, cash, for either July or August. As already stated, furnace men are impressed with the belief that prices will go higher, and it is not strange therefore that they are indifferent about making additional sales.

Muck-Bar—Is firm at $26.50 @ $27, cash; sale 1000 tons for August at $27, cash. It is doubtful whether a seller could now be found below $27, cash, in view of the upward tendency of the market for the raw material.

Spiegel—Is still quoted at $30, cash, for 20 % and Ferromanese at $60 for 80 %.

Manufactured Iron.—Prices are firmer, in sympathy with the raw article, but remain unchanged; we continue to quote first-quality Iron upon a basis of 1.60¢ to 1.70¢ for Bars, 60 days, 2 % off for cash; we hear of sales at considerably lower rates, but there is a great difference in the quality of Iron, and a good many buyers are willing to pay the difference for No. 1 stock. Skelp-Iron continues in demand and prices are firm at 1.62½¢ @ 1.65¢ for Grooved and 1.90¢ @ 1.95¢ for Sheared.

Nails.—There is considerable inquiry for Cut Nails and the market is stiffer at all points west of the Alleghany Mountains. Pittsburgh manufacturers are refusing to sell under $1.90, 60 days, 2 % off for cash, but contracts, it is said, have been made quite recently at a good deal below the base quoted. One party claims to have contracted for over 30,000 kegs at less than $1.60, but there are now no sellers at any such rates. We are assured by those in a position to know that even at $1.90 rates the margin is small and that all kinds of finished Iron are bringing a better price than Nails. A meeting of Western Nail manufacturers has been called to take place at Cleveland on the 24th, at which it is expected a new association will be organized and probably a new price-list adopted. It is intimated that a movement is on foot to have Nails cut finer, so as to have about the same number in a pound that there are of Wire Nails. The adhesive quality of the Cut Nail is generally admitted to be better than that of the Wire Nail, and this, in connection with the fact that they are cheaper, leads to the belief that the Cut Nail is destined to come to the front again. While the card rate of the Wire Nail remains unchanged at $2.25, 60 days, 2 % off for cash, it is said that the card price is being cut and that sales have been made as low as $2.15.

Wrought-Iron Pipe.—There is a continued good demand; mills are all busy and association prices are being faithfully maintained. Discounts on Black Butt-Welded Pipe, 52½ %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; on Galvanized do., 52½ %; Casing, 5⅝ inches, 62½ % off; other sizes, 60 % off; Boiler Tubes, 1¾ inches and smaller, 55 %; 2 inches and larger, 60 %; 2-inch Tubing, 13¢ ℔ foot, net; Line-Pipe, 2-inch, 10½¢ ℔ foot net; 2½-inch, 16¢; 3-inch, 21¢; 3½-inch, 25¢; 4-inch, 30¢; 4½-inch, 36¢; 5-inch, 42¢; 6-inch, 58¢; 7-inch, 70¢; 8-inch, 95¢; 9-inch, $1.20; 10-inch, $1.25; 12-inch, $1.60. The regular monthly meeting of the association takes place to-morrow at the Oriental Hotel, Manhattan Beach.

Old Rails.—There is considerable inquiry for Old Iron Rails, with but few offering, and the market is firm. We now quote at $23 @ $23.50, and one of the largest sellers in this market is now asking $24. Brokers report that it is difficult to find sellers, and that there is a scarcity of Rails does not admit of a doubt. Old Steel Rails are in fair demand and may be quoted steady at $17 @ $17.50 for short and $19 @ $20 for long pieces.

Steel Rails.—There is nothing new to note; both of the mills here are busy and sold pretty well ahead, and prices are still quoted at $28 @ $29, cash, at mill, according to delivery. Prompt or near-by delivery commands more than future delivery.

Billets, Blooms, &c.—Bessemer-Steel Billets and Blooms are in demand, and prices are still tending upward, with mills nearly all sold ahead; we now quote at $27 @ $27.50, cash, according to size, delivery and quality, &c. Nail Slabs are quoted $27. Rail Crops may be quoted in the absence of sales at $17.50 @ $18, with but very few offering.

Railway-Track Supplies.—Prices remain unchanged. Spikes, 1.95¢, 30 days, delivered; Splice Bars, 1.60¢ @ 1.70¢; Track Bolts, 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

Old Material.—There is an improved demand and prices are firmer, and for some kinds higher. One of the best authorities in Pittsburgh quotes No. 1 Wrought Scrap at $19, net ton; Old Car-Axles, $24; Cast Scrap, $14.50, gross; Old Car-Wheels, $18, gross; Frog Scrap, $17.50.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts.
CINCINNATI, July 15, 1889.

Pig-Iron.—There has continued to be an undertone of confidence in the local market for Pig-Iron since the last review, and the volume of business as a whole has been sustained, while in Charcoal Iron there was a material increase in the transactions. The demand has been general for nearly all grades, and orders have been booked to a satisfactory extent for forward delivery, mainly for the earlier months. While no boom in the trade is reported or even desired by producers, there is a hopeful feeling that the market will continue to strengthen until they will admit of production without absolute loss to many of the furnaces. While prices have sustained no general advance during the week, there has been a slight appreciation in value on some of the Southern Mill Irons, Silver Gray, &c. There is no evidence of any speculative feeling, but the purchases are made for the consumptive requirements of the various manufacturers, and are liberal in the aggregate for this season of the year. The following are the approximate prices current here at the close for cash, f.o.b.:

Foundry.

Southern Coke, No. 1	$14.75 @	$15.25
Southern Coke, No. 2	14.00 @	14.75
Southern Coke, No. 3	13.25 @	13.50
Ohio Soft Stone Coal, No. 1	15.75 @	16.50
Ohio Soft Stone Coal, No. 2	14.75 @	15.50
Mahoning and Shenango Valley	16.00 @	16.50
Hanging Rock Charcoal, No. 1	20.00 @	22.00
Hanging Rock Charcoal, No. 2	19.00 @	21 50
Tennessee and Alabama Charcoal, No. 1	17.50 @	18.50
Tennessee and Alabama Charcoal, No. 2	16.50 @	17.50

Forge.

Strong Neutral Coke	13.25 @	13.50
Mottled Neutral Coke	12.50 @	12.75
Cold Short	@	13.00

Car-Wheel and Malleable Irons.

Southern Car-Wheel	23.00 @	24.00
Hanging Rock, Cold Blast	22.00 @	25.00
Lake Superior Car-Wheel and Malleable	20.00 @	21.00

Manufactured Iron.—There continues to be a confident tone, with some increase in the volume of business, but without essential change in values.

Old Material.—The offerings are only moderate, and prices for Old Rails are nominally quoted at $20 @ $20.50 ℔ ton, and for Old Wheels $17 @ $18.

Nails.—There is a steady demand and prices are reported at $1.87 @ $1.90 ℔ keg for 12d @ 40d, with 10¢ rebate in carload lots at the mills.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, July 15, 1889.

Pig-Iron.—The advance in prices, together with the increased demand, is truly refreshing after the low prices that have been prevailing. Even at the increased prices many of the furnaces—in fact, most of them—are declining orders for future delivery, excepting at prices which the trade would not entertain, although many think that the time is not far distant when buyers will meet the figures that furnaces will then ask. The disposition, however, of the furnaces is one of an entirely conservative nature, and they are averse to anything like a boom in prices. There are a number of stacks that will not have a pound to offer at any price for the next three months. Southern foundries also have appeared to take a sudden departure in their desire to lay in stocks. A few days since a salesman started out on a tour through the South and sold on his trip over 2400 tons of Foundry in lots of one to six carloads, all for immediate shipment. From the best information received it appears to be a general idea that Iron will still further advance from 50¢ to $1 ℔ ton, which will make an aggregate advance of from $1 to $1.50 ℔ ton, probably during the present month.

Louisville.

LOUISVILLE, KY., July 15, 1889.

Pig-Iron.—The market continues firm, and there has been a fair amount of buying during the last week. The trouble has been to secure deliveries and grades desired, as buyers accept present prices as representing the full value of the Iron and do not anticipate in future the possibility of doing better. Mill Iron is especially in demand, and for prompt delivery and large quantities there is difficulty in obtaining it. Owing to lack of fuel some of the Southern furnaces are banked and two prominent Southern furnaces have gone out of blast to reline, so that the output is diminished. Car companies here are reported to be overcrowded with work and the rolling stock of most roads is diminished to such an extent that they find it necessary at this time to go on the market for a round lot. We quote as follows:

Southern Coke, No. 1 Foundry	$14.75 @ $15.25
Southern Coke, No. 2 Foundry	14.25 @ 14.75
Southern Coke, No. 3 Foundry	13.50 @ 14.00
Gray Forge	13.00 @ 13.50
White and Mottled, different grades	12.50 @ 13.00
Silver Gray, different grades	13.00 @ 13.50
Southern Charcoal, No. 1 Foundry	16.25 @ 16.75
" " No. 1 Mill	14.75 @ 15.25
Southern Car-Wheel, standard brands	21.75 @ 22.75
Southern Car-Wheel, other brands	18.00 @ 19.50
Hanging Rock Coke, No. 1 Foundry	15.50 @ 16.00
Hanging Rock Charcoal, No. 1 Foundry	19.50 @ 21.00
Hanging Rock, Cold Blast	20.75 @ 22.75

Detroit.

WILLIAM F. JARVIS & Co., under date of July 15, 1889, say: We are pleased to report the continued activity in buying of Lake Superior Charcoal Pig-Iron. Close inquiry among the largest buyers, namely, the Malleable-Iron manufacturers, shows a very heavily increased business, showing the purchasing to be on the healthiest kind of basis. Little or no speculation in Lake Superior Pig has been made this year, and while the accumulation was unusually large at the opening of navigation, the distribution has been much larger in proportion. Prices remain nearly the same, but the strength is shown by concessions made by buyers, where sellers were forced to make them a few weeks since. Southern Iron is strong, all of the furnaces in that section declining orders at current quotations except for prompt delivery. Silvery Irons and Ohio Softeners seem a little more plentiful. There have been no transactions reported in Old Material. We quote present market as follows:

Lake Superior Charcoal, all numbers	$19.00 @ $19.50
Lake Superior Coke, all ore	18.00 @ 18.50
Lake Superior Coke, cinder mixed	17.50 @ 18.00
Standard Ohio Black Band	17.50 @ 18.50
Southern No. 1	16.50 @ 17.00
Southern Gray Forge	15.00 @ 15.50
Southern Silvery	16.00 @ 16.50
Jackson County (Ohio) Silvery	18.00 @ 18.50
Old Wheels	18.50 @ 19.00

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, July 15, 1889.

Pig-Iron.—The improved tone noted last week continues to be the feature in this department. Prices are gradually hardening, and while sales have been light the figures received are generally from 25¢ to 50¢ ℔ ton higher than sales made ten days or two weeks since. Some furnaces have withdrawn from the market, having booked enough orders at present prices and seem disposed to look for higher figures. Whether or not they will be disappointed remains to be seen, but judging from present appearances, indications point to an upward movement and a generally improved condition of trade. Sales are made at about the figures quoted herewith, for cash, f.o.b., St. Louis.

Southern Coke, No. 1 Foundry,	$15.50 @ $16.00
Southern Coke, No. 2 Foundry,	14.75 @ 15.50
Southern Coke, No. 3 Foundry,	14.25 @ 14.75
Gray Forge	13.50 @ 14.00
Ohio Softeners	17.00 @ 19.00
Lake Superior Charcoal	20.00 @ 21.50
Missouri.	
Charcoal Foundry, No. 1	16.00 @ 16.50
Charcoal Foundry, No. 2	15.00 @ 15.50
Tennessee.	
Charcoal Foundry, No. 1	17.50 @ 18.00
Charcoal Foundry, No. 2	17.00 @ 17.50

Connellsville Coke, f.o.b. East St. Louis, $4.40; St. Louis, $4.55.

Bar-Iron.—Demand keeps up well and the fact that several mills are closed for repairs gives the appearance of scarcity, and with these points in their favor manufacturers who have been accumulating stock for some weeks past are enabled to fill orders promptly, and generally at prices that are considered fairly remunerative. Jobbers report an increasing demand and say the market shows signs of continued improvement. Some good-sized orders have been entered by manufacturers of agricultural implements, whose business is unusually brisk just now. Small lots from store are quoted at $1.80; carload lots $1.60.

Barb-Wire.—There is very little business doing in this department and in the absence of transactions prices are to a certain extent nominal, as follows: From $2.75 to $2.80 for Painted and from $3.35 to $3.40 for Galvanized; carload lots at from $2.65 to $2.70 for Painted and $3.25 to $3.30 for Galvanized, f.o.b. St. Louis.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, July 17, 1889.

The general condition of the Iron trade continues to improve and prices are slowly moving upward. This gradual hardening of rates is regarded as a very satisfactory indication of substantial improvement, and buyers are rapidly becoming convinced that their opportunity for purchasing cheaply has passed for the present. While a radical advance in prices is hardly expected, even by the most sanguine, there is room for the establishment of values on a considerably higher plane, to enable manufacturers to realize a reasonable profit on their operations.

Pig-Iron.—Furnace agents report an excellent demand from consumers, but difficulties are being experienced in placing orders with furnaces. A great deal of Iron could be sold at full prices if it could be had. Occasionally a belated consumer makes the entire round of the market in search of Iron needed to supply his immediate requirements, showing that not everybody took the precaution when prices were low to lay in at least a moderate stock. In some cases furnaces are holding off for higher prices, but the great majority of them have taken orders enough to cover their output for some considerable time, and are not in a position to sell for early delivery. Low grades can be had in much better quantity than Foundry Irons, but the demand for the former is quite light in this vicinity, owing to the peculiarities of local foundry practice. For such brands as are still available quotations are as follows: No. 1 Anthracite Foundry, at tidewater, $17 @ $18; No. 2, $16 @ $17; Gray Forge, $15 @ $15.75; Southern No. 1 Coke Foundry, delivered at New York, $16.50 @ $17.50; No. 2, $15.75 @ $16; No. 3, $15.50; Gray Forge, $14.50.

Scotch Pig.—A better trade is reported, but the volume of business is, of course, still very light. The small shipments now being received are disposed of as fast as the Iron is landed. Advices from Scotland predict an advance in ocean freights as well as in the price of Iron, but sales here continue to be made on the basis of former quotations — namely: $19 for Eglinton, $19.50 for Dalmellington, $21 @ $21.25 for Langloan and $21.50 for Summerlee and Coltness.

Spiegeleisen.—Continued dullness is reported, with 20 % nominally worth $28 @ $28.50, and 80 % Ferro $59 @ $60.

Wire-Rods.—Foreign Rods are unchanged at $43, ex-ship, with no sales.

Steel Billets.—Inquiries for round lots are in the market, consumers desiring to cover future requirements, anticipating higher prices.

Finished Iron and Steel.—The market is much more active than last week, and a better feeling prevails all round. The demand has been particularly good for Plates and Structural Material. An order for 1000 tons of Steel Ship-Plates was placed at 2.25¢, delivered at tidewater, but the makers are now asking 2.3¢. In fact, advances have been made all along the line of fully 5¢ ℔ 100 lb, while on some makes 10¢ more is asked. The strike at Homestead may have had some effect on these prices, but it remains to be seen whether they will recede now that it has been settled. Quotations are as follows for delivery on dock: Sheared Plates, 2.10¢ @ 2.15¢; Universal Mill Plates, 2.15¢ @ 2.20¢; Angles, 2.10¢ @ 2.15¢; Tees, 2.5¢ @ 2.6¢; Beams and Channels, 2.8¢. Tank Iron, 2.10¢ @ 2.20¢; Shell, 2.4¢ @ 2.5¢; Steel Tank, 2.3¢; Shell, 2.4¢ @ 2.5¢; Flange, 2.75¢ @ 2.8¢; Fire-box, 3.25¢ @ 4¢; Common Bar-Iron, 1.6¢ @ 1.65¢; Medium, 1.7¢; Refined, 1.8¢ @ 1.9¢.

Wrought Pipe.—Good orders have been placed for Pipe, among them one for 12 miles of 4-inch Line Pipe. The market is firm at full prices. No concession is needed on the association rates to make sales. A meeting of the manufacturers is taking place to day at Manhattan Beach, and an advance is looked for.

Merchant Steel.—A better demand is reported in this line. Quotations continue as follows: Tool Steel, good brands, in large lots, 7¢ @ 7½¢; specials, 12¢ @ 20¢; Crucible Spring, 3½¢ @ 4¢; good Open-Hearth Machinery, 2.30¢ @ 2½¢; Bessemer ditto, 2¢ @ 2¼¢; Open-Hearth Spring, 2¼¢ @ 2½¢; Tire, 2.15¢; Toe-Calk, 2¼¢; Sheet, 6½¢, 8½¢ and 10½¢. Although these fig-

ures are the same as last week's, there is an improved tone manifest, concessions now being rare. A slight advance in the near future is expected by the leading houses.

Steel Rails.—The business of the past week foots up to about 15,000 tons, divided among several of the Eastern mills. The demand for Rails has been quite steady for several weeks, and the mills are now in such condition that it is difficult to place orders for delivery earlier than September. Negotiations are pending for further lots, and if projected railroad schemes now maturing can be financed some large orders would be in the field. Up to the 1st of July the manufacturers reporting to the Board of Control had booked orders since January 1 for 963,550 tons. The one mill outside of the Steel Rail Association, the Allegheny Bessemer, very probably sold enough Rails to make the entire quantity sold at least 1,000,000 tons. The true criterion of the condition of the Rail trade, however, is the quantity shipped. The following table shows the tonnage of Steel Rails, weighing 50 pounds per yard and upward, shipped by each mill from January 1 to July 1, on account of 1889 allotments, as reported by the Board of Control:

Mills.	Tons
Illinois Steel Company (North Chicago, Joliet and Union, combined)	139,574
Edgar Thomson	134,700
Scranton	73,341
Lackawanna	62,763
Bethlehem	48,877
Pennsylvania	44,532
Cambria	29,240
Cleveland	11,368
Troy	2,280
Worcester	None.
Western	None.
Springfield	None.
Total	546,675

To this total the shipments of the Allegheny Bessemer would have to be added to get the entire quantity for all the mills of the country. Even then the total would fall short of 575,000 tons. The sales up to July 1 of last year were 934,987 tons, and the deliveries 585,558 tons. The year previous up to the same date the sales were 1,695,055 tons, while the shipments were 907,351 tons. These figures clearly illustrate the different condition of the Rail trade this year. Prices at present range from $27.50 to $28 at mill.

Track Supplies.—Orders for considerable quantities of Fish-Plates, Bolts and Spikes have been taken, and other contracts are coming forward. A better feeling prevails, although prices are not quotably higher. The range continues about as follows: Steel Fish-Plates, 1.75¢ at mill; Iron Fish-Plates, 1.80¢ @ 2¢; Square-Nut Bolts, 2.70¢ @ 2.75¢; Hexagon-Nut Bolts, 2.90¢ @ 3¢; Spikes, 1.95¢ @ 2¢.

Old Material.—Old-Iron Rails have been sold in this market to the extent of some 3000 tons during the past week. Terms were private, but it is generally believed that from $22.75 to $23 could be realized if further lots were available. Old Steel Rails are wanted at $18. Old Car-Wheels are worth $19 @ $20, and the demand is about equal to the supply. A better inquiry is noted for Scrap, but No. 1 Wrought still sells at $21.

Financial.

The ordinary conditions have prevailed during the week in the general markets, and trade, as a whole, is rather slow, characteristic of the summer months. Talk of trust combinations is heard on all sides. In a single week we hear of a Bridge-Builders' Trust, a Railroad Trust, a combination of breweries, a proposed International Salt Trust, with a capital of $20,000,000, and, finally, of a trust or combination of manufacturers of gas and electric-light fixtures, formed by parties in Philadelphia, Baltimore, Cleveland, Brooklyn, New York and other cities. Then there is the Straw-Board Trust, gone to pieces, attended with a decline of $12 @ $13 per ton for the manufactured article within a few days after bolstering up prices as high as $45 per ton. The leading trusts on 'Change proved to be wholly untrustworthy and a heavy liquidation took place, lead, suffering most severely on the exposure of an enormous capitalization, amounting to $83,000,000. In other cases, as the result of investigation, the acknowledged capital was not far from figures which had been accredited by current talk, but Sugar, American Cattle, Cotton-Oil and Chicago Gas had all to bear their share of the obloquy attaching to the *exposé*. The Government crop report sustains the large expectations indulged respecting the coming harvests, the weather in the wheat belt having been favorable and the corn crop has much improved. The lack of harmony in the Interstate Commerce Railway Association and the further complications in the east-bound freight rates arrangements have an effect detrimental to trade interests. As matters stand, the real fight is between the Grand Trunk and Baltimore and Ohio, over the rate for grain. Breadstuffs are weak and spot wheat is a shade lower. Corn is steady, with more trading on export account. Coffee has a good tone for spot goods. Cotton steady, on a moderate demand. Sugar is lifeless. Among dry goods jobbers buyers are not inclined to operate on the basis of the new price-lists.

The stock market was irregular, varying with the tone of reports received from the conferences of railway managers in Chicago and New York. On Thursday a break in National Lead was the overshadowing feature and all others were sympathetically depressed. Friday and Saturday were dull and uninteresting, but closed at an advance. On Monday the grangers were influenced by favorable news from Chicago, and the coal shares were firm in expectation of another advance in prices. On Tuesday the grangers were firm on the announcement that grain rates on the principal Western lines would be restored. A further engagement of $500,000 for Europe was reported.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered	106¾
U. S. 4½s, 1891, coupon	106¾
U. S. 4s, 1907, registered	128⅝
U. S. 4s, 1907, coupon	128¼
U. S. currency 6s	118

Time money is easier, and on first-class collaterals loans are 4 % for any period up to four months inclusive, and 4½ for five to six months. No rates are quoted for mixed collateral, loans upon this class being subject to special contract. Lenders continue to discriminate against the trust stocks. Commercial paper remains at 4½ @ 5 % for 60 to 90 day indorsed bills receivable; 4¾ @ 5½ for four months' acceptances, and 5 @ 6½ % for good single names having from four to six months to run.

For the first time in six weeks the Associated Banks report a gain in the surplus reserve, equaling $1,612,075—swelling the amount held above legal requirements to $6,630,100. The items show a gain in specie and legal tenders combined of $1,150,000, and a decrease in loans of $2,515,000 and liabilities of $1,848,300. The gold engaged for export on Saturday, amounting to $1,500,000, does not show in this statement. The gold went on a special order to Paris, although as an exchange operation. The London *Economist* says: "There is no reason to expect further shipments of gold from the United States. It is much more likely that gold may have to be sent thither, for the autumn expansion of circulation in the States may be larger than usual, owing to the abundant harvest, and there is some doubt as to the extent to which that will be met by the release of Treasury funds." The purchases of bonds by the Treasury Department during the current week will bring the aggregate amount of revenue expended under the present series of bond purchases to $175,000,000 In spite of this the Treasury surplus is large, and large deposits with the banks are maintained.

The exports of breadstuffs from the United States for the fiscal year ended June 30, as computed by the Bureau of Statistics, show a slight falling off as compared with the previous year, the figures being $120,211,237, and for the year before $124,702,083. The great falling off in exports is in wheat and wheat flour, and the gain is in corn. The sum of 45,956,216 bushels makes up the total wheat export for the fiscal year 1889, while the total for 1888 amounted to 65,186,257 bushels. The difference in value is that between $41,234,779 and $55,854,298. The exports of wheat flour for the fiscal year just closed reached 9,026,886 barrels, valued at $43,786,059, while the exports of 1888 were 11,840,460 barrels, valued at $54,226,884. The corn exports for the year show an increase from 24,076,625 bushels, valued at $13,243,026, in 1888; to 69,215,104 bushels, valued at $32,803,065, in 1889. The total exports of beef and hog products were valued at $7,250,844 for June, 1889, against $6,384,446 for June, 1888. The total for the eight months ending June 30 reached 64,416,751 for 1889, against 52,015,761 for 1888.

The total exports of mineral oils for June amounted to $57,214,605 gallons, valued at $4,262,263. This is a large gain over June, 1888, when the figures were 44,372,319 gallons, of the value of $3,735,384. The total for the year just ended shows an increase, though not in quite so large a proportion. For 1889 the total exports are 612,088,079 gallons, of the value of $49,420,817, and for 1888, 574,780,097 gallons, valued at $46,585,551. The largest exports are, as usual, in illuminating-oil, reaching for June, 1889, 47,829,345 gallons, of the value of $3,432,896.

The total exports of cotton for June, 1889, were 48,976,514 lb, valued at $5,008,746, and for the year ending June 30, 1889, they were 2,294,187,966 lb, valued at $228,573,894, There is a considerable falling off in the month as compared with June, 1888, but there is an increase this year over last.

The aggregate bank clearances in 41 cities show an increase compared with last year of 22 %; outside of New York, 18.5 %. A syndicate bank with a capital of about $15,000,000 has been organized in Brussels to sell sugar on commission and make loans to manufacturers.

Metal Market.

Copper.—There was a decline of 10/ in the London market since our last week's report, spot giving way to £40. 17/6 and futures to £40. 5/, the sales being large—2000 tons—consumers taking supplies freely from producers. Here the price of Lake Copper remains nominally 12¢ to large consumers; in a jobbing way 12¼¢ @ 12½¢ is obtained, while August delivery has been offered at 11¾¢ without meeting with any buyers, evincing little faith in a speedy settlement of the dissensions among members of the combine. The import of American Copper into Liverpool and Swansea during the first six months has been 12,050 tons Fine, against 14,322 tons same time last year and 4661 in 1887. The export of Ingot-Copper from the United States during the first 11 months

of the last fiscal year was 13,610,073 lb, against 22,504,785 the previous one. The closing quotation on the Exchange to-day was 11.75¢, bid.

Tin.—Spot Tin improved for the week in the London market from £88. 12/6 to £89. 2/6, and futures from £89. 5/ to £89. 17/6, sales figuring up 500 tons. Nothing transpired in the way of sales in our own market; the price asked for spot and futures was 19.95¢, whereas only 19.70¢ @ 19.75¢ was bid. The import of Tin into the United States during the first 11 months of the last fiscal year has been 30,984,585 lb, as compared with 29,131,506 lb during the corresponding period of the previous year. The increase of some 2000 tons in the shipments made abroad from the Straits Settlements during the first six months evidently played into the hands of operators for a fall in London since the recent break set in. The spot price of Tin in New York to-day is 19.70¢ @ 19.75¢. *Tin-Plates*—Have continued unaltered, and so has the situation; the moderate demand carries off current arrivals, leaving prices unchanged. The foreign market is firm at about 3d advance from the lowest point, and with the number of orders now being put forward for fall delivery there is little doubt as to makers being able to maintain their advance. We quote large lines, ordinary brands, ℔ box: Siemens-Martin Steel, Charcoal finish, $4.75 @ $5.50; Coke finish, $4.60 @ $4.65; Ternes, $4.12 @ $4.30; Coke Tins, $4.22½ @ $4.32½, and Wasters $4.05 @ $4.10. The import of Tin-Plates into the United States during the first 11 months of the last fiscal year has been 675,603,087 lb, against 573,569,703 lb the previous year. England's export to the United States, first five months, was 150,232 tons, against 117,254 in 1888 and 109,943 in 1887. To all quarters it was 187,786, against 153,781 and 145,072.

Lead.—Our market has been as flat and inactive as it possibly could be. On Friday 50 tons were sold at 3.85¢ to make a price, and 100 tons September at 3.77½¢. The nominal spot quotation at the close is 3.85¢ @ 3.95¢. At St. Louis sales have been made at 3.70¢ @ 3.75¢, and at Chicago at 3.75 @ 3.80¢. Closing prices on the Exchange to-day were 3.82½¢ bid, and 3.92½¢ asked.

Spelter—Has been inactive, but nothing can be had for less than 5.10¢ for Common Domestic, nor any Silesian below 6¢, there being a fresh improvement of 5/ in London.

Antimony.—A moderate amount of activity has been kept up. Hallett's at 15½¢ @ 15¼¢ and Cookson's at 16½¢.

New York Metal Exchange

The following was the only sale of the week:

WEDNESDAY, July 17.

10 tons Tin, spot ..... 19.85¢

Coal Market.

The Anthracite Coal Trade is dull and without interesting features. The disposition of buyers to hold off is quite noticeable, pointing to the probability of a short and active season. Dealers conjecture that more or less Coal is going into consumption at cut prices, and the increasing number of straggling lots afloat in the harbor serves to bear out this view of the situation. The demand is admitted to be backward, both East and West. Quotations are, f.o.b.: Free Burning, Broken, $3.90; Egg and Chestnut, $4.15; Stove, $4.40. Hard White Ash at Port Liberty is $4.25 for Lump and Steamboat, $4.05 for Broken and $4.25 for Egg. Respecting Coal at the Pennsylvania furnaces the Philadelphia *Ledger* says:

"The improved condition of the Iron industries and the recent advances in the prices of both Pig and Manufactured Iron, together with the excellent outlook, have attracted the attention of the Anthracite companies, who within the past year have made large concessions in the price of furnace sizes of Coal on account of the poor condition and low prices for Iron which then prevailed. The present price of Lehigh and Wyoming Lump and Steamboat Coal, the sizes used by Iron furnaces, is $2.05 @ $2.10 ℔ ton at the breaker, and, besides getting their Coal at this low figure, the Iron-makers are conceded a low rate of tolls. The Schuylkill Valley furnaces pay only $1.85 ℔ ton, and the shippers think that that price is entirely too low and are talking of advancing the price to about $2 or $2.10 on August 1."

Production at the mines shows little evidence of restriction, the weekly product for the last five weeks averaging about 800,000 tons. For the week ending 13th inst. 794,000 tons are reported, making a total since January 1 of 15,749,000 tons, a decrease of about 1,300,000 tons compared with last year.

The Pennsylvania Railroad Company announce a reduction of 50¢ a ton in the rates on Anthracite Coal from the mines to Chicago. Beginning on July 19, the rate will be $3.50, instead of $4. The new figure is the lowest ever made.

It is reported from Cornwall that the New York, Ontario and Western Railroad Company have bought extensive water-front property at that place upon which to erect Coal-pockets for the shipment of Coal by the Hudson River.

Charles Parish, in the Wilkesbarre region, is stripping a vein of Coal from which 1,000,000 tons will be taken out.

Bituminous Coal is fairly active. Complaints are heard of a scarcity of cars. Cumberland reports for the week ending July 7, 62,000 tons, and for the year, 1,507,000 tons. Clearfield shipments were 72,485 tons, and Beech Creek, 20,819 tons.

The Reading Coal and Iron Company, the Philadelphia *Record* says, have just taken significant action in leasing one of their collieries to individual operators. The Eagle Mine, at St. Clair, has been leased to George W. Johns and Thomas Croyton, and it is stated on good authority that if the new plan shall prove successful more collieries will be relinquished to private hands.

Imports.

Hardware, Machinery, &c.

Almquist, A. W., Mach'y, case, 1
Boker, Hermann & Co., Mdse., pkgs., 12; Arms, cs., 66
Field, Alfred & Co., Mdse., cs., 15
Folsom, H. & D., Arms Co., Arms, cs., 20
Godfrey, Chas. J., Arms, cs., 29
Graef Cutlery Company, Cutlery, cs., 7
Hartley & Graham, Mdse., cs., 61
Merchants Despatch Company, Arms, cs., 21
Newton & Shipman, Files, cks., 2
Schoverling, Daly & Gales, Arms, cs., 6
Sheldon, G. W. & Co., Arms, cs., 13
Weriemann, H., Arms, cs., 47
Wiebusch & Hilger, Mdse., pkgs., 10
Witte, John G. & Bro., Cutlery, cs., 13
Barbour Bros & Co., Mach'y, case, 1
Field, Alfred & Co., Chains, csks., 22; Guns, cs., 2; Anvils, 21; Mdse., cs., 21
Kittridge Arms Company, Mdse., cs., 8
Oastler, W. C., Mach'y, pkgs., 11
Sumner, C. P. & Co., Mach'y, cs., 24
Vom Cleff, Chains, csks., 24
Wiebush & Hilger, Lim., Hdw., cs., 11; Anvils, 116

Colonel Gillespie, in his report upon New York Harbor, says that the Hell Gate improvement will be completed within four years. A survey of the main ship channel, just completed, shows that the improvement is in a most gratifying condition, and there is no indication that Gedney's Channel has shoaled since last December. For the continuation of the harbor work $160,000 is asked. The estimates for the improvement of the Hudson River during next year are $200,000.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, July 17, 1889.

Iron and Steel of all descriptions have been more or less active during the week, and a strong tone prevails throughout. Warrant speculation, naturally, has been much brisker also, being influenced in a degree by reports of important sales of special Scotch brands for American account. Warrants advanced 6d and makers' brands are 1/ @ 1/6 higher than a week ago. Middlesborough Pig is strong at last week's advance, and Hematites show 6d rise also. Steamer freights, Glasgow to New York, are 1/6 higher. The Staffordshire list houses have advanced prices a further 10/, and Common Bars are 5/ up, while other Manufactured Iron is held strongly. The trade in Steel continues brisk. Slabs have been sold at a shade under previous nominal prices, but all other articles remain strong.

Tin speculation has been more active and the market is looking stronger under the influence of moderate supplies and good consumption.

Copper has been quieter and prices have shown a declining tendency, being affected in some degree by the fact that the demand from consumers has slackened considerably. There is also a belief that the demand for Bars will be further curtailed in consequence of the large quantities of American Matte and Spanish Precipitate arriving. The Chili charters, advised by wire, are 1400 tons. Public stocks have decreased 930 tons, but the visible supply has increased 279 tons the past fortnight. Sales of furnace material during the first half of the month include 600 tons American Matte at 8/3; 500 tons Anaconda Matte at 8/6; 250 tons Montana Matte at 8/4½ and 3215 tons Anaconda Matte at 8/3—all to arrive in Liverpool. The amount of Old Copper offering is less than for some time past, and holders' views are now considerably above those of buyers.

The Tin-Plate market has been characterized by greater activity. A large business was done at the quarterly meeting, and makers are very firm. Prices, however, remain as quoted last week.

Scotch Pig.—There has been a large business, and the market is strong at a further advance:

No. 1 Coltness,	f.o.b.	Glasgow	56/
No. 1 Summerlee,	"	"	55/
No. 1 Gartsherrie,	"	"	53/
No. 1 Langloan,	"	"	55/6
No. 1 Carnbroe,	"	"	48/
No. 1 Shotts,	"	at Leith	54/6
No. 1 Glengarnock,	"	Ardrossan	52/6
No. 1 Dalmellington,	"	"	46/6
No. 1 Eglinton,	"	"	45/

Steamer freights, Glasgow to New York, 4/; Liverpool to New York, 10/.

Cleveland Pig.—Demaand good, but business checked by high prices asked. No. 3 Middlesborough quoted 40/, prompt, by makers.

Bessemer Pig.—Sales have been made at 6d advance and the demand is brisk. West Coast brands, mixed numbers, 50/, f.o.b. shipping point.

Spiegeleisen.—There is still a good demand and the market is firm. English 20 % quoted 80/, f.o.b. at N. W. England shipping point.

Steel Rails.—The market continues strong with the demand lively. Heavy sections quoted at £4. 15/ and light sec-

tions £5 @ £5. 5/, f.o.b. at N. W. England shipping point.

Steel Blooms.—A good demand for these and prices very firm. We quote £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Business fairly active and prices maintained. Bessemer, 2½ x 2½ inch, £4. 12/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—There is more doing, but prices are a shade lower. Bessemer, £4. 10/, f.o.b. at N. W. England shipping point.

Old Rails.—The demand is better and prices are firmer. Tees quoted at £3. 5/ and Double Heads, £3. 12/6, c.i.f., New York.

Scrap-Iron.—There has been a fair trade at firm prices. Heavy Wrought quoted £2. 2/6 @ £2. 5/, f.o.b.

Crop Ends.—More doing in these at firm prices. Bessemer quoted £2. 12/6 @ £2. 15/, f.o.b.

Tin-Plate.—The market quiet at the close but firm. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/3 @ 15/6
IC Bessemer Steel, Coke finish	13/6 @ ..
IC Siemens " " "	13/9 @ ....
IC Coke, B. V. grade	13/ @ ....
Charcoal Terne, Dean grade	12/ @ 12/3

Manufactured Iron.—Makers very firm but high prices check business. We quote, f. o. b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars	..	..	..	@	8	2	6
" Common "	7	0	0	@	7	2	6
Staff. Bl'k Sheet, singles	....	....		@	8	5	0
Welsh Bars (f.o.b. Wales)	....	....		@	6	2	6

Copper.—The demand only fair at present. To-day's prices for Bars were £41, spot; £40. 10/, three months' futures. Best Selected, £47. 10/.

Tin.—There is more demand to-day and better prices were paid. Straits quoted at £89. 7/6, spot, and £90 for three months' futures.

Lead.—Demand continues light and the market rather weak. Quoted £12. 5/ for Soft Spanish.

Spelter.—Prices again higher and the market active. Quoted at £19 10/ for ordinary Silesian.

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Florin (Austria)	35.9
Milreis (Portugal)	$1.08.
Milreis (Brazil)	54.6
Mark (Germany)	23.8
	Pounds
Kilogram	2.205
Picul	134.

BRAZIL.

PARA, July 9, 1889.—*India Rubber.*—Unaltered; receipts since July 1, 135 tons. Market firm with an active demand. *Exchange* advanced to 28d. July 12.—Receipts since July 1, 210 tons. The steamer Augustine took for New York 230 tons, of which 160 ordered by manufacturers.—*Per cable direct.*

CHINA.

HONG-KONG, May 31, 1889.—*Petroleum.*—The rates have been subject to a further decline in consequence of the arrival of the cargoes per Hallgerda, Luzon and Agenor. We quote $2.05 @ $2.10 ₱ case, Comet Brand, spot cargo. Further supplies being shortly due, it is to be feared that a fresh progress of the downward tendency will soon take place. *Exchange.*—60 days' sight on New York and San Francisco, $100, Hong-Kong currency; 74⅜¢, gold.—*Arnhold, Karberg & Co.*

EAST INDIES.

MANILA, July 8, 1889.—*Hemp.*—There are buyers at $14.25, against $8.37½ same date last year, equaling ₱ ton, cost and freight, £46, against £28. 10/; no clearances are reported for the United States, against 6000 bales same week in 1888; since January 1 they sum up 134,000 bales, against 97,000; loading for do., 9000, against 2000; cleared for England since January 1, 147,000 bales, against 184,000; loading for do., 5000, against 6000; cleared for all other ports, 23,000 bales, against 42,000; receipts at all ports since last cable, 7,000, against 13,000, and since January 1, 311,000 bales, against 314,000 in 1888 and 242,000 in 1887. *Freight.*—$7.50, against $5.50. *Exchange.*—Six months' sight, on London, 3/5¼, against 3/5¼.—*Ker & Co., per cable direct to their agent in New York, Mr. Charles Nordhaus, 89 Water street.*

HOLLAND.

ROTTERDAM, July 4, 1889.—*Tin.*—The decline from 55.75 guilders ₱ 50 kg. to 54.50 is chiefly due to the heavy shipments that have been made from the Straits Settlements during the first half of the year of 12,175 tons, against 10,625 in 1888, 9750 in 1887 and 8600 in 1886. The following statement shows the position of Banca Tin in Holland on June 29, from the official returns published by the Dutch Trading Company:

	1889. Slabs.	1888. Slabs.
Import in June	22,420	12,288
Total six months	105,680	118,221
Deliveries in June	15,854	32,500
Total six months	76,942	72,246
Stock second hand	22,197	18,309
Unsold stock	171,802	119,521
Total stock	193,999	137,830
	Piculs.	Piculs.
Afloat	3,200	2,000

Statement of Billiton.

	Slabs.	Slabs.
Import in June	12,270	3,000
Total six months	50,546	49,076
Deliveries in June	7,060	11,650
Total six months	41,388	40,491
Stock	28,458	23,713
	Piculs.	Piculs.
Afloat	25,000	23,500
Quotation June 29 { Banca	f 54½	f 47
{ Billiton.	f 54¼	f 46

The preceding combined returns of Banca and Billiton for 1889, compared with those for 1888, exhibit:

	Slabs.	Equal to tons.
An increase of the import for June of	19,402	606
A decrease of the import for the six months of	11,071	346
A decrease of the deliveries for June of	21,236	664
An increase of the deliveries for the six months of	5,593	175
An increase of the stock second hand of	8,633	270
An increase of the unsold stock of	52,281	1,615
An increase of the total stock of	60,914	1,904

An advance of the quotation of Banca of f 7½, equal to £12.10/ ₱ ton.
—*De Monchy & Havelaar.*

GERMANY.

HAMBURG, July 6, 1889.—*Iron.*—Pig-Iron is well sustained; in Rhenish Westphalia makers are holding back. Spiegel is tending upward, the demand outrunning the supply, and 10 to 12 ℔ cannot now be had for less than 66 marks ₱ ton. Great activity has been noticeable during the week in Forge Pig; Foundry ditto moves off steadily. Dortmund quotes the former 47 @ 62, and the latter 59 @ 66; White Steel Pig is 61 @ 62; German Bessemer, 57 @ 58; Thomas, 47 @ 48; Luxembourg, 36 @ 41. Since the price of Coal and Pig-Iron has risen subsequent to the late strikes, German Finished Iron has become so dear that it cannot compete any more abroad, but the domestic requirements are large and pressing enough, so that makers are booked for some time ahead. Prices have advanced between 7.50 and 10 marks ₱ ton. Structural Iron works are very busy; Hoop Iron has been steady. Boiler Sheets are being ordered three months in advance, the inquiry being unusually pressing, and higher prices are willingly submitted to. For the moment the price has been raised 10 marks ₱ ton; Thin Sheets are also in very lively request. The Wire branch is the only one unfavorably situated. Machine car-shops and foundries are getting on steadily. The quotations at Dortmund for Soft and Bessemer Steel in rods is 155; Wire-Rods, 110 @ 120; Steel Rails, 127 @ 130, and ditto for mines, 115 @ 120. The May production of Pig-Iron in Germany was 360,855 last year; this year, in consequence of the strikes, it did not exceed 306,290 tons, of which 152,650 tons Forge and Spiegel, 21,514 tons Bessemer, 93,788 Thomas, and 38,347 Foundry. During the first five months of 1889 it was 1,761,564 tons, against 1,756,310 in 1888.—*Borsenhalle.*

BELGIUM.

BRUSSELS, July 4, 1889.—*Iron.*—All rolling-mills in Belgium are in receipt of large orders. Plates and Sheets in particular are urgently wanted. Before this week comes to a close a fresh improvement therein is about certain. There is more doing in Steel Rails for speedy delivery.—*Moniteur des Intérêts Matériels.*

A Great Connecting Bridge.

An important engineering work, called the Ohio Connecting Bridge of the Pennsylvania Company's lines, is in progress on the Ohio River, below Pittsburgh, near Brunot's Island, where the main channel of the stream will be spanned by a 525-foot iron truss, each end of which will rest upon massive piers rising to a hight of 74 feet above low-water mark. The cost of the stone-work alone is stated to be $800,000, it being necessary to sink the foundations down to the solid rock by means of caissons. This part of the work is superintended by Frank E Jordan, a veteran of 20 years' experience. The caisson already sunk is 25 x 54 feet, and two engines are used for compressing air at 10 pounds to the square inch About 1500 tons of stone hold the caisson down to the river bottom, while four upright pipes 4 inches in diameter to convey compressed air are used are used as excavators, and four 14-inch pipes take down the concrete. Superintendent Jordan, describing the process, said as he bent down to where the edge of the caisson rested on the solid rock: "This is tapered off to 9 inches in thickness. We try to blast out the rock with dynamite in such a manner as to keep the caisson level. We are aided in this by our greatest enemy—water, for the few inches in here is always level, and we can let down the caisson ½ inch at a time by judicious mining under the edge. And every few minutes the pressure of air escapes under the edges with that great noise you heard. This tube, coming straight from that reservoir on the machine boat, flows in constantly and keeps the atmosphere pure. Here is the air-drill which bores the holes for dynamite charges. It works on a pressure of 50 pounds, and the escaping air mingles with the normal pressure immediately." The dynamite is fired in small charges, three at a time and continuously until all are expended. The general contractors in this bridge, which will be the greatest connecting bridge in America, are Drake, Stratton & Co. Theodore Watts is in general charge. M. J. Becker is engineer-in-chief and Mr. Engel is engineer in charge, with Silas O'Connell as first assistant and E. Corner Brown second assistant.

The nailers of the Brooke Iron Company, at Birdsboro, Pa., held a meeting on the 16th inst., and decided not to accept the reduction proposed by the company two weeks ago. The nail factory is not running and the sheet-mill has shut down in consequence. Both establishments employ 350 hands. The proposed reduction was because of the general dullness in the nail market.

British capital has been pledged in London for the construction of extensive lines of railway in Mexico, to establish communication with the States of Gautemala, Nicaragua and to Belize, in Honduras, and it is reported that British investments in railways in the southern portion of the country will amount to $30,000,000 within the next six years. The line eastward from the Pacific is being located by the engineers.

Hardware.

The general report made by the trade is that the present volume of business is limited, but that the market is characterized by good feeling and the anticipation of a satisfactory business during the remainder of the year. There has as yet been no important change in prices, but the improved condition of the Iron market has its effect in inducing a disposition in some quarters not to press sales on some heavy goods at the extreme figures which are ruling. There is more or less complaint in regard to collections, which are referred to as sluggish.

Cut Nails.

The scarcity of leading sizes continues and prices are very firm. The demand is good but not unusually heavy for the season, the stiffness of the market being apparently due solely to the decreased production. At present not many Western Nails are coming here, but it would not require much of an advance to pave the way for them. Dealers are still irregular in their quotations, some naming $1.85, while others positively refuse to meet that price and in a few cases are securing $2 for carload lots. Those who want leading sizes of Nails only are obliged to pay from $1.90 to $2. The firmness in Wire Nails is imparting some strength to the Cut-Nail trade, and manufacturers of the latter are carefully watching the movements of their Wire-Nail competitors.

At the meeting of the Western Cut Nail Association, in Wheeling, W. Va., on Wednesday last, a new gauge was adopted, by which the number of Nails to the pound will be practically the same as the Wire Nail. This increase, together with the lower price at which Cut Nails are furnished, is expected to aid materially in stimulating the demand for Cut Nails. A new schedule of prices for the various sizes was referred to a special meeting, to be held on the 24th inst.

By the announcement made on page 14 it will be seen that the Terre Haute Iron and Nail Works, manufacturers of Nails, Terre Haute, Ind., have a job lot of Iron Cut Nails, staple sizes, which they are offering at special prices. They allude to the demand for Iron Nails as having fallen off and they desire to close them out.

Wire Nails.

The standard penny goods are held at the same prices as heretofore, there being only a moderate amount of business. There is still a good deal of uncertainty in regard to the list on the miscellaneous goods. Although the one given in our last issue has been accepted by the Western manufacturers it has not entirely, even with them, superseded the old one, quotations and sales being still made on the basis of both lists. The other manufacturers of the goods have not as yet adopted the new list, and are waiting evidently to ascertain whether or not it is likely to become the standard list. The existing diversity of lists in this line of goods is annoying to manufacturers as well as the trade, and some efforts are being made, we understand, by some Eastern makers to induce the establishment of a uniform list. Such a result would be acceptable to the trade at large, and it is hoped that none of the manufacturers will place obstacles in the way. In regard to the price of these goods there is also a good deal of unevenness.

Miscellaneous Prices.

The present arrangement on Bright Wire Goods is working very satisfactorily for the manufacturers and securing a desirable regularity in the price of the goods. The tone of the market is strong, and it is expected that another advance will be made before long. Of this, however, no positive intimation is given, as the matter is entirely in the hands of the commissioner.

The following are the list prices of the Triumph Kennel Chains, manufactured by the Bridgeport Chain Company, Bridgeport, Conn. They are subject to a discount of 50 per cent.

	Polished Steel. Per doz.	Nickel-plated. Per doz.
No. 1, 4½ feet.....	$5.50	$7.50
No. 1, 6 feet.....	6.60	9.30
No. 1, 9 feet.....	8.70	12.70
No. 2, 4½ feet.....	4.90	7.00
No. 2, 6 feet.....	6.10	8.75
No. 2, 9 feet.....	7.50	11.50
No. 3, 4½ feet.....	4.65	6.50
No. 3, 6 feet.....	5.60	8.15
No. 3, 9 feet.....	7.00	10.80

The Wire-Nail Card.

In addition to the letters from Hardware men which we have printed in these columns we have received a great many others referring to the recently-adopted Wire-Nail card, and criticising or commending it, as the case may be. Apart from the direct question to which these letters relate they indicate very clearly the extent to which Wire Nails are sold, and the important position they occupy in all parts of the country. A few years ago they were practically unknown, and now it would seem that there is scarcely a respectable store anywhere that is without them, and in many they occupy an increasingly prominent place. The business in them is, of course, very far in extent from that in the Cut Nails, but it is evident that great progress has been made, even during the past year, in giving to the Wire Nails an extended use and a permanent place in the market. The low prices prevailing, while unsatisfactory to the manufacturers, are undoubtedly doing a great deal for the introduction of the goods, and the future of the Nails is exceedingly promising, as there is every indication that they will to a still further extent replace the old kinds. There is scarcely a State or Territory from the Atlantic to the Pacific from which we have not received advices, thus indicating the importance of the Wire Nail and the favor with which it is regarded.

Many of the letters which we have received have expressed disapproval of the card rate as applied to the miscellaneous Wire Nails, as contemplated in the earlier action of the Wire-Nail Manufacturers, but since the manufacturers have recognized the unadvisability of selling these goods by the card and have adopted a miscellaneous list, there is no further need of referring to this part of the question. The trade will be glad to recognize the willingness on the part of the manufacturers to meet the views of their customers and to give a list which will be free from the objections that were made against the card on these goods.

There appears to be among the trade a disposition to regard the new card on the Standard Nails with more or less disapproval, many of our correspondents making the point that 60d is an unreasonable and troublesome base on account, principally, of the fact that exceedingly few Nails of this size are sold. Others, however, although the change seems to be somewhat radical, are disposed to accept it, and very wisely are ready to recognize the advantages possessed by the new card. Some of them are disposed to regard the letters criticising it as unreasonable and as evincing a disposition on the part of the trade to find fault without sufficient cause. This aspect of the matter is good-humoredly and forcibly referred to in the following communication from a prominent house in Vermont:

I note your correspondents' remarks in the issue of the 20th inst., under the title "How it Looks in the Country." I find so far no trouble with the Nail card and do not anticipate any, and in saying this I do not wish it to be understood that I live in a locality free from the "growler," Oh, no! He is here, life size, mouth working. It's very little matter what system the makers of Nails adopt in making a price to place before the people, fault will be found with the way and manner. So without even for a moment thinking of offering advice I fancy the best way is for the Nail-makers to please themselves, and then they will be sure some one is pleased. Ten days prior to the first day of June I received a letter from a dealer in general merchandise in the northern part of the State kicking because I had charged him extra on 10d. Wire Nails, and saying it was a swindle and unheard of, &c. Investigation developed the fact that he had for the past 11 months paid 15 cents a keg extra on Wire Nails of that size and did not know it. Let the card be what it will, the live man will handle it without difficulty and the drones will find their usual place.

It is evident that many Hardware men find it a matter of difficulty to adapt their methods to so radical a change, but in the following communications a disposition is manifested to accept the situation, and in some instances it will be seen that our correspondents express hearty approval of the new scheme. It will, we think, be generally conceded that whatever disadvantages there may be in selling goods by the new card, the purchase of them is simplified and facilitated.

BELLEFONTE, PA.—In this vicinity the Wire-Nail trade is in its infancy, and the sale of Wire Nails is very small as compared with the Cut Nail. We, however, find the Wire-Nail trade gradually increasing. Few, if any, of our customers know how Wire Nails are bought, and in selling we do not use the card, but ascertain the size and quote net price. Under the circumstances the new price-list has many advantages to us over the old method of quoting prices.

STILLWATER, MINN.—Wire Nails are not yet the leading Nails, and our sales of them are only one-third those of Cut Nails. The card on Wire and Cut Nails has been changed so often that our customers are not much surprised when we change the price of any size Nail. We expect if the association grows any way weak that there will be a cutting in extras, same as in the Iron Card at present.

FARMINGTON, MAINE.—We have as yet experienced no difficulty from the new Nail card. Of course our customers ask why the change is made, but on its being explained they are satisfied.

BLOOMINGTON, ILL.—We are having no more trouble in adjusting ourselves to the new Wire-Nail list than is usual when such radical changes are made. It does seem absurd to quote 60d Nails one week 35 cents above 12d, and the next week the same below, but we presume the absurdity came in when the first list was made.

CONCORD, N. H.—We have read your article on "How it Looks in the Country," and we think it very good. Have not sold many Nails under the new card, but expect every day to have the experience detailed in the dialogue. Presume if the manufacturers do not change again for a few weeks customers will get used to it and won't complain. It makes work for the Hardware man.

ALEXANDRIA, VA.—So far we have no difficulty in selling Wire Nails by the new card. Our carpenters are getting gradually to use them and speak very favorably of them as being both good and economical

HACKETTSTOWN, N. J.—The dialogue "How it Looks in the Country," is a fair sample of what occurs in our store occasionally since the new card came out. We have pushed Cut Nails to avoid the explanation necessary. At the same time, we think when understood thoroughly

and generally (unless changed again before that time arrives) the new schedule will be an improvement.

CALAIS, MAINE.—We do not sell many Wire Nails, except in 1-pound papers, and in that line we are glad to see anything to reduce the variety. We think the writer of "How it Looks in the Country" makes a good deal of talk about almost nothing, except in changing lists so often.

MINNEAPOLIS, MINN.—The penny-Nail card may be perhaps a good thing; we are using it and find no difficulty with it.

Changes in Lists.

Another point brought out in the extensive correspondence on the Wire-Nail card is the fact that the trade throughout the country generally regard with disfavor changes in established lists, involving, as they usually do, much trouble and more or less loss. Many of our correspondents have evidently written on this general subject, taking the new Wire-Nail card as the text for their complaint, but having in mind the frequent changes by which Hardware men are continually annoyed and perplexed. There has fortunately been something of a disposition of late to refrain from making such changes with the former frequency, but it is proverbial that in Hardware changes of lists may be looked for at any time, as manufacturers for their own purposes, to equalize prices, in a covert manner to obtain an advance, and sometimes even to puzzle and perplex the trade, adopt new lists and discounts which put things on a new basis. Our readers will think of many lines of goods in which such changes have been made with annoying and evidently unnecessary frequency. These changes the trade do not relish, and many of our correspondents, we are assured, in complaining of the change in the Wire-Nail card have in mind the many changes which are from time to time occurring in other lines of goods. It will not, therefore, be necessary for the Wire-Nail manufacturers to consider our correspondents' criticisms as bearing exclusively upon them and their recent action, but all manufacturers may from our correspondents' letters infer the dissatisfaction with which list changes are almost universally received by the trade. As illustrating this point we give the following extracts from recent letters:

LOS ANGELES, CAL.—We cannot refrain from expressing our disgust with the new Wire-Nail list. For several reasons the base should be 20d or 10d, not 60d, as not one customer in 25 wants any 60d; but the worst part of it is making Brads under same base of advance as Nails. The profit on a keg of Wire Nails is 20 to 25 cents a keg, and the new card requires Brads to be sold in the same way, which leaves a profit of 5 or 6 cents on a 25-pound box, which cannot be done only at a loss, and Brads are sold mostly by the 25-pound box. The whole card is a gross blunder.

BELLWOOD, NEB.—It looks in the country as though the Wire-Nail trust wanted the earth. We were just getting a good trade built up on Wire Nails, but this new card has almost knocked it in the head. We think the manufacturers will not make any more money by this act. They will not by our efforts at least.

WATERLOO, IOWA.—We read "How it Looks in the Country" and it is just what a great many customers will say. The change in Nail card annoys the salesmen in the house and on the road, also the buyer. The manufacturers ought to avoid changing lists all they possibly can. The old 10d base card was the best. Other sizes might have been changed, some out of proportion, but changing a card all through to advance the price seems unnecessary. If it is necessary to advance why not put up the base price?

NEWARK, N. J.—I consider your article a very mild illustration of the many annoyances the new card gives both to buyer and seller. In fact, from my limited standpoint there will be many changes in lists before the manufacturers stand as a unit. They seem to be experimenting at the expense of the public, with no settled plan other than to knock a dollar out this way until somebody presents a new plan, when all seem to jump for it like a new toy.

ROCK ISLAND, ILL.—I think "How it Looks in the Country" "hits the (Wire) Nail on the head." To the average dealer and customer it seems to be an unnecessary change and that there are too many classes of Nails; but we have no voice in the matter—pay what is asked or do without.

ITHACA, MICH.—We had a stock of Wire Nails on hand when change of card took effect, and have been selling at old card. Don't think enough of new one to adopt it until we are obliged to. It is certainly the worst card we have yet had.

LARIMORE, D. T.—When I have given customers base price they always insist that that should apply to all sizes, and when I show them the card they look doubtful still.

BLOOMINGTON, ILL.—We wish to enter our protest against the constant changing of lists with no apparent purpose but to confuse the retailer and make him think there is no advance in price when there is one. We would think that the manufacturers by this time must see that it won't work, its only effect being to keep retail dealers trying to explain away the foolishness of the manufacturers, which, we must confess, is something hard to do.

MERIDEN, CONN.—We hardly know how to make a price to our customers, for we are obliged to make a price on each size they want to use, and as for "base," there is none, as there are extras for each size. This, of course, makes it bad for us in having to look up the price on each size and quoting separately. It is bad also for our customer, inasmuch as if he asks us the base on Wire Nails and we say $2.50 per keg and nothing more is said and he figures as heretofore on his job, he gets left very bad, and if you try to explain the new card it breaks him all up. In our opinion Wire-Nail manufacturers have made a grave mistake in making the change. We cannot see any sense in it any more than we can figure a bill of Wire Nails from a base where every size is extra and there is no base only in name. The article in *The Iron Age* represents our experience at present, but does not cover all the trouble that the new card causes us. We trust the manufacturers will see their mistake soon and adopt a card that will be satisfactory to buyer and seller, as well as themselves. We think they can.

ORANGE, N. J.—We think the new card on Wire Nails is wrong, especially on shelf goods. It would tend to force retail dealers to sell Molding Nails by the pound at a margin so small that there would be no margin at all. We do not think the new card will take and hope it will not. In regard to the penny Nails, would much rather have the base 10d to 40d, but do not think it will make much difference to the retail trade what size they make base if they would stick to one thing; but to charge more for 60d than for 12d one day and then charge more for 12d than 60d the next is very silly, and we are tired of the changing. Get a base and stick to it

Items.

McCaffrey & Bro., Philadelphia, sold July 15 their entire plant, stock and goodwill to the McCaffrey File Company, who succeed them in the business of manufacturing Files and Rasps. Courteous acknowledgment is made of the favors bestowed upon them for the past 26 years, and a favorable consideration is solicited for the new company, who, it is stated, will continue to manufacture an A No. 1 standard File and Rasp, as heretofore. Of the new company Hugh McCaffrey is president and John McCaffrey secretary and treasurer. The trade, to whom this line of Files is so widely and favorably known, will be glad to know that although a stock company has been made of the firm there will practically be no change in the management.

The Claflen Mfg. Company, Cleveland, Ohio, have issued a handsome price-list and descriptive catalogue of their line of Builders' Hardware. It represents an assortment of Locks, Latches, Lock Furniture, Sash-Lifts, Shutter-Knobs, Shutter-Bars, Cupboard Catches, Sash-Locks and the Security Door and Window Bolts. The Combination Lightning Can-Opener is also represented and a full description given of the Thatcher Patent Bolt-Fasteners, with testimonials in regard to their advantages. The Eureka Oiler and Wiper is also shown. The list is accompanied by discount sheet, with the intimation that net prices will be quoted on application.

The name of the Champion Iron Fence Company, Kenton, Ohio, has been changed to the Champion Iron Company. When the company were incorporated in 1878 their energies were almost exclusively devoted to the manufacturing of Iron Fence, but since that time they have added so many branches of iron-work that the original name has ceased to be appropriate. The change has accordingly been made as above noted, but Iron Fence will as heretofore be one of their specialties.

E. C. Coffin Hardware Company, Hailey, Idaho. Ter., are expecting to build a Hardware store which they intend shall embody in it the most approved methods of arrangement. In view of this fact they would like to communicate with manufacturers of shelving and other interior furniture, and will esteem it a favor if those who are in a position to supply these fixtures will address them.

Scranton Iron and Brass Company, Scranton, Pa., issue a circular describing the Dolphin Cleat. This article is illustrated, with a description of its special features and the manner of its use. List prices are also given.

Narragansett Machine Company, Providence, R. I., have issued a handsome catalogue of the Standard Scientific Gymnastic Apparatus, of which they are manufacturers, among which are several new and interesting machines. Improvements have also been made in some that have been on the market heretofore. The catalogue gives a clear and satisfactory description of the gymnasium goods represented in it, illustrating the leading types and giving concisely the prices, weights, principal dimensions and space required for use, while it is not attempted to show all the pieces and forms of the apparatus. It represents a very interesting line for the purposes indicated, and its illustrations and descriptions of the extensive variety of machines for the development of the different muscles and for the many special uses of the apparatus in the gymnasium and also at home will be observed with exceptional interest. Calesthenic Apparatus, Dumb-Bells, Bar-Bells, Mattresses, &c., as well as miscellaneous supplies for gymnasiums, are also shown

Among the special notices on page 52 is one signed "B.," care of *The Iron Age*, in which a prominent house in the West advertises for a man to travel in Ohio, Indiana and Michigan to sell direct to factories. For those who are familiar with factory and machinists' supply goods, the opportunity thus presented would seem to be an especially favorable one.

Novelty Foundry and Mfg. Company, St. Louis, Mo., issue a circular relating to their manufactures, including Zinc Ladles. Dog-Irons, Tuyere-Irons, Bolster-Plates, Quoits, Hydrants, Street-Washers, &c. They call special attention to the Wilson

Hydrant, alluding particularly to the valve as embodying the most approved principles of construction.

National Mfg. Company, Lancaster, Pa., issue circulars of several specialties of their manufacture, including the new National Flower-Stand, Patent Revolving Flower-Stand, a new Door-Catch and the new Globe Slicing Machine.

Landon Ketchum, South Norwalk, Conn., issues a neat illustrated catalogue of Gas Cooking and Heating Stoves, Water-Heaters and other improved gas apparatus for domestic use. Circulars are also issued describing his Flush Sash-Lift, Fancy Sash-Lifts and Brass Pulls and the Challenge Gas Stove.

L. Brigham, Decatur, Mich., issues circulars describing his Soft-Ground Horseshoe. A full explanation is given of its construction, together with a number of testimonials from parties who have used it.

The Henney Buggy Company, Freeport, Ill., with St. Louis Repository, Geo. K. Oyler, 805 and 807 Main street, issue a catalogue illustrating their light Carriages, Phaetons and Buggies. Their Patent End Spring Combination is also shown with reference to its advantages.

The Buffalo Seal and Press Company, Buffalo, N. Y., have put on the market the Paragon Skewer-Puller, a simple article for extracting the skewer from a joint of meat

The Huntington-Hopkins Company, San Francisco, Cal., have removed from their former place of business, at the junction of Market, Bush and Front streets, to their handsome and commodious new building on Fremont street, between Market and Mission. The new building has a frontage of 93 feet on Fremont street, and in hight is five stories and basement, extending back 137½ feet, where it joins the rear of a four-story brick structure, also owned by the company, and having a frontage of 137½ feet on First street by a depth of 137½ feet. The two buildings are connected by a paved court, roofed with glass and iron, and make a total depth of 275 feet. This arrangement permits of a double driveway through the entire premises, thereby enabling heavy trucks entering from either street to load and unload and pass through without turning. The interior of the building has been fitted with a special view to the requirements of a large business, nothing having been omitted that would contribute to this end. Five hydraulic-ram elevators and two hand elevators are employed in raising and lowering goods between the basement and the floors above. Well-lighted and commodious offices are situated at the rear of the main salesroom, which is on the ground-floor of the Fremont street front. The main salesroom, while containing many shelf goods, exhibits samples of nearly every line of Hardware, &c., that the house carries. These consist of a great variety of Agricultural Implements, Miners', Blacksmiths' and Carpenters' Tools, an extensive line of Builders' Hardware, the best grades of Cutlery and Sporting Goods of all kinds. In heavier goods there is constantly on hand a large stock of Bar, Bundle, Sheet and Plate Iron and Steel, Wrought and Cast-Iron Pipe and Plumbers', Blacksmiths', Milling, Mining and Railroad Supplies. Ninety men are employed in this establishment. The house was founded by C. P. Huntington, in Sacramento 40 years ago, the firm name of the original concern as well as its branch above referred to being Huntington, Hopkins & Co. On February 23, 1888, the business was incorporated under the name of the Huntington-Hopkins Company, the officers of the corporation being Albert Gallatin, president, Charles Miller, vice-president, W. R. S. Foye, secretary, and Collis P. Huntington, treasurer.

Vaughan & Bushnell Mfg. Company, Chicago, Ill., have issued their illustrated catalogue and price-list for 1889. It represents their line of special solid Steel Tools, including Blacksmith's Tongs, Horseshoers' Nail-Cutting Nippers, Creasing Tools, Pritchel's Punches, Cold Chisels, &c., and a varied line of Anvil Tools. Railroad-Track Tools, Track Hammers, Coopers' Drivers and Punches, Bricklayers' Chisels, and Farmers' Plow Anvils are also represented. The catalogue is intended for jobbers in Heavy Hardware, Railroad-Track Tools, Blacksmiths' Anvil Tools, Horseshoers' Tools, &c. The quality of the steel of which these goods are made is especially referred to, the Anvil Tools being alluded to as much lighter than the average run of this line of goods, and, therefore, better adapted to wagon and carriage work. The catalogue is elegantly printed, the cuts being finely executed and the paper of excellent quality and finish

Whitman Agricultural Company, St. Louis, Mo., have issued their nineteenth annual catalogue, showing a very extensive line of Agricultural Machinery, Railway Supplies, &c. It represents Hay Presses, Corn-Shellers, Road-Scrapers, Drag Saws, Horse-Powers, Feed-Cutters, Wheelbarrows, Broadcast Seeders, Cider-Mills, Feed-Mills, Trucks, Field-Rollers, Baggage and Express Wagons, &c., of their own manufacture, and a number of other goods and machines. The descriptive matter is brief and to the point. The company have recently added a Full Circle Steel Rebound Plunger Hay-Press to their already large line of this class of machinery, which is referred to as exceptionally complete. Their export trade is referred to as having assumed large and very flattering proportions and constantly increasing.

C. F. Guyon & Co.,

99 Reade street, New York, have issued a supplementary catalogue of Hardware, Tools, &c., which, arranged as it is with especial care and skill and embodying some new features, reflects credit on their catalogue department, which is in charge of Henry Hopkins. The catalogue represents manufactures of the Nashua Lock Company, Brooklyn Lock Company, Niles Mfg. Company, Chicago Sewing Machine Company, Lockwood Mfg. Company, Hobart B. Ives & Co., Hamblin & Russell Mfg. Company, Montauk Wood Knob Company, Payson Mfg. Company, M. Einwachter, A. G. Peck & Co., and Coryell Flint Paper Company, of whose goods full stocks are carried by C. F. Guyon & Co. The catalogue is a large-paged fully-illustrated volume numbered from 500 to 715. In the arrangement special care has been taken to facilitate reference on the part of the merchant, enabling him with the least possible trouble to gain from the catalogue the desired information in regard to the goods. A careful examination of it discovers a number of points which are more or less novel and a departure from the conventional methods, some of these of minor importance, but at the same time contributing to the utility of the book and adding to the convenience with which it can be consulted. Among these it may be mentioned that, wherever feasible, the cuts representing the goods are placed under the folio—that is, on the outside of the pages— so that in taking up a number of leaves in the right or left hand in such a way as to hide part of the page and running over them rapidly the cuts representing the goods are brought prominently into view. In case the cuts on a given page are of full size it is so stated near the top of the page, but where they only show the style of the article with no reference to comparative size such line is omitted. If the cuts are of different relative size it is stated under each that it is one-fourth size, one-half size or full size, as the case may be. In regard to the goods of the Nashua Lock Company, a description of their finishes is given on page 501, and on page 582, where the matter devoted to the goods of the Lockwood Mfg. Company begins, there is given an interesting comparative list of names of finishes in which the Lockwood are compared with the Nashua, Reading, Sargent, Corbin and Penn goods. As this list may be of interest we give it below:

Lockwood.	Nashua.	Reading.	Sargent.	Corbin.	Penn.
Copper Bronzed.....	No. 30			No. 11.	
Toledo "	" 25	German Bronzed.	Tuscan Bronzed.	Amber Bronzed.	Vienna Bronzed.
Brooklyn "	" 26	American "	Berlin "	American "	Bremen "
	" 27	Persian "	English "	No. 12.	London "
Albany "	" 29	Albion "	Yeddo "	" 13.	Dresden "
Galena "	" 28	Geneva "	Tokio "	" 14.	Paris "
Philadelphia Bronzed..	" 29	Plain Albion Bronzed.	Yeddo "	" 13.	Dresden "
Bronze Metal.....	" 1	Bronze Metal.	Bronze Metal.	" 1.	Bronze Metal.
Regal Bronze.....	" 3	Royal Bronze.	Imperial Bronze.	" 3.	Roman Bronze.
Plain Bronze Metal.....	" 1	Plain Bronze Metal.	Plain Bronze Metal.	" 1.	Plain Bronze Metal.

The next page gives a description of the Lockwood Mfg. Company's various finishes of Builders' Hardware. The finishes on their Locks, Knobs and Escutcheons are designated as heretofore, but their line of Builders' Hardware, which is referred to as an entirely new line, is given a self-explanatory system of numbering, by means of which the finish is indicated by the initial figure. Thus, 0 denotes Coppered Bronzed; 2, Brooklyn Bronzed; 7, Regal Bronze, &c., so that in ordering any of the goods in this line the catalogue number of the article wanted is sufficient description In connection with the description of goods to which these finishes are applied there is throughout the catalogue a reference to this page giving the description of the finishes. It is worthy of note that in the reference page of the Nashua Lock Company's Bronze-Metal Bell-Pulls the number of the Door-Lock is given in the first column, followed by a reference to the page of the catalogue on which a description of the Lock will be found, the numbers of the Bell-Pulls to match, with round roses, square roses, ornamental outline or square outline being given subsequent columns, with a reference to the catalogue page of each. As a result of this arrangement, if it is desired to find Bell-Pull matching a Lock of a given number, the number of the Bell-Pull of desired size may be immediately ascertained, with the catalogue page in which it is described. Another feature is

also illustrated on the same page, in that the number of the goods which are described in the catalogue under review are given in full-faced type, those described in the volume to which this is a supplement being printed in ordinary type. This feature is adhered to throughout and materially facilitates reference. Other points might be mentioned, but these will indicate something of the care that has been taken in compiling the book.

Exports.

PER BARK UGGLAN, JUNE 13, 1889, FOR CAPE TOWN, SOUTH AFRICA.

By W. H. Crossman & Bro.—1 case Carriage Hardware, 49 bundles Carriage-Ware, 6 dozen Fly-Traps, 8 Carriages, 72 dozen Handles, 93 packages Carriage-Ware, 4532 pounds Sisal Rope.

By Bradley & Co.—1 box Harness.

By New Home Sewing Machine Company.—100 Sewing-Machines.

By Coombs, Crosby & Eddy.—3 cases Carriage-Ware, 39 bundles Rims and Spokes, 12 dozen Axes, 42 dozen Brooms, 66 dozen Slates, 12 dozen Handles, 6 dozen Carpenters' Tools, 1 dozen Churns, 500 Handles, 5 dozen Wash-Boards, 1 dozen Grindstones, 2 Saws and Lathes, 24½ dozen Tools, 10 dozen Hardware, 15 dozen Tools, 12 dozen Traps, 39 dozen Handles.

By W. B. Fox & Bro.—1 case Coffin Trimmings, 195 Handles.

By Welsh & Lea.—3 crates Stoves, 1 case Castings, 4 packages Hardware.

By M. Berliner.—12 packages Machinery, 1 case Saws, 7 packages Carriages, 12½ gross Axle Grease, 4 packages Ship Chandlery.

By W. H Peabody & Co.—150 pounds Blacking, 205 dozen Handles.

By Strong & Trowbridge.—3 cases Handles.

By R. W. Forbes & Son.—6 dozen Mouse-Traps.

By Arkell & Douglas.—6 Buggies, 1 crate Blacking, 25 cases Fruit Jars, 10 cases Axle-Grease, 2 cases Handles, 1 case Toys, 1 case Forks, 3 cases Blacking, 1 case Hammers, 1 case Saws, 4023 pounds Barb-Wire, 2 packages Hardware, 5 cases Shade-Rollers.

PER BARK B. WEBSTER, JUNE 14, 1889, FOR BRISBANE, QUEENSLAND.

By Winchester Repeating Arms Company.—42 Rifles, 48 Tools, 50,000 Primers.

By Collins & Co.—55 dozen Edge-Tools, 221 dozen Edge-Tools.

By Welsh & Lea.—14 cases Iron Bolts, 1 case Carpet-Sweepers.

By Higganum Mfg Company.—1 crate Corn-Shellers, 2 cases Corn-Shellers.

By Seth Thomas Clock Company.—8 packages Clock Parts.

By Ansonia Clock Company.—26 boxes Clocks.

By R. W. Cameron & Co.—39 boxes Handles, 110 boxes Handles, 125 boxes Clothes-Pins, 100 boxes Clothes-Pins, 16 boxes Saws.

By H. W. Peabody & Co.—1620 feet Hose, 4 cases Fire-Arms, 9 cases Agricultural Implements, 9 cases Pumps, 1 case Hardware, 14 cases Valves, 2500 feet Hose, 12 Bundles Carriage-Ware, 1 case Chucks, 3 cases Hardware, 1 case Toys.

By H. W. Peabody & Co.—26 packages Presses, 5 cases Hardware, 6 crates Refrigerators, 25 packages Wood-working Machinery, 5 cases Edge-Tools, 35 cases Windmills, 17 cases Hardware, 3 packages Traps.

By V. Basanta.—20,000 Primers, 32¾ gross Toy Pistols, 5 gross Toy Pistols, 40 dozen Wash-Boards, 40 dozen Hatchets, 19 dozen Saws, 48 dozen Files, 1 case Harness, 70 dozen Wash-Boards, 15 Velocipedes, 50 dozen Wash-Boards, 120 Hair-Clippers, 1 dozen Pistols, 4 dozen Stencils, 120 dozen Handles, 1 dozen sets Sad-Irons, 3 gross Axle Grease, 20 dozen Axes, 12 Scales, 6 dozen Awl-Hafts, 18 dozen Cow Bells, 3 dozen Brackets, 6 dozen Reflectors, 100 dozen Burners, 6 dozen Rat-Traps, 18 dozen Cow Bells, 1 gross Awl-Hafts, 32 dozen Lamp Goods, 67 dozen Lamp Goods.

By Arkell & Douglas.—120 dozen Handles, 240 dozen Handles, 4 packages Lanterns, 1 box Sewing-Mcchines, 25 cases Axle Grease, 156 cases Edge Tools, 51 boxes Clothes-Pins, 20 cases Edge Tools, 9 crates Wheels, 4 bundles Shafts, 3 cases Toys, 4 cases Axles, 6 cases Hardware, 133 cases Edge Tools, 50 boxes Clothes-Pins, 24 bundles Wash-Boards, 6 cases Shade Rollers, 1 gross Blacking, 22 cases Agricultural Implements, 12 cases Axle Grease, 3 cases Lamp-Ware, 39 packages Carriage-Ware, 32 cases Handles, 1 case Wringers, 138 packages Hardware, 50 cases Edge Tools, 10 cases Handles, 15 crates Blacking, 30 cases Edge Tools, 4 cases Sewing-Machine Oil, 8 cases Axle Grease, 57 packages Hardware, 13 packages Lamp-Ware, 18 packages Hardware, 4 packages Hardware.

By F. B. Wheeler & Co.—3¾ gross Axle Grease, 28½ dozen Saws, 13 dozen Handles, 3 boxes Nails, 6 dozen sets Shade-Rollers, 2 dozen Graters, 1 case Primers and Reloading Tools, 1 dozen Planes, 1 dozen Beaders, 4 dozen Sifters and Broilers, 1 dozen Adzes, 8 dozen Hay Forks, 28 pounds Stones, 16¼ dozen Drills, 3 dozen Egg-Beaters, 8 dozen Hammers, 6¾ dozen Meat-Choppers, 28 dozen Handles, 10 cases and 1 barrel of Hardware, 3 dozen Wood Rakes, 3 cases Wagons, 1 case Wagons, 6 gross Whips, 19½ dozen Cow Bells, 28 cases Stoves, ½ gross Axle Grease, ½ gross Axle Grease, 7 gross Shade-Rollers, 72 dozen Handles, 1 case Wagons, 1 pair Shafts, 5 cases Wagons, 1 bundle Shafts, 5 cases Handles, 8 cases Wagons, 1 bundle Shafts, 24 dozen Brushes.

PER SCHOONER JOHN C. SMITH, JUNE 14, 1889, FOR PORT NATAL, SOUTH AFRICA.

By Corner Bros. & Co.—43 packages Tools, 67 packages Hardware, 18 cases Fruit-Jars, 82 cases Hardware, 24 gross Blacking, 25 cases Slates, 5 cases Grindstones.

By New Home Sewing Machine Company.—150 Sewing-Machines.

By R. W. Forbes & Son.—15 packages Carriage-Ware.

By H. W. Peabody & Co.—20 bundles Wash-Boards, 65 packages Hardware.

By W. H. Crossman & Bro.—3 cases Hardware, 2 cases Hardware.

PER BARK JAMES L. PENDERGAST, JUNE 20, 1889, FOR PORT NATAL, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—4 racks Churns, 6 Store Trucks, 27 Hay-Cutters, 20 dozen Brooms, 2 dozen Ladders, 1 dozen Wheel-Barrows, 288 Handles, 6 Scales, 16 dozen Carpenters' Tools, 240 dozen Wood Handles, 7½ dozen Meat Choppers and Knives, 9 Stuffers, 28 dozen Carpenters' Tools, 18 dozen Agricultural Tools, 13 gross Hardware, 6 Plows, 3 dozen Wheelbarrows, 1⅜ dozen Washing-Machines, 12 Mangles, 3 Lawn-Mowers, 5000 feet Fuse, 150 pounds Nails, 6 dozen Wood Handles, 8 dozen Agricultural Tools, 8 dozen Axes, 2 dozen Bench Screws, 71 pounds Oil Stones, 34 dozen Hardware, 3 dozen Carpenters' Tools, 58 dozen Tools, 38 dozen Hardware, 6 cases Carriage-Ware, 10 dozen Locks, ½ gross Hat Racks, 10 gross Hardware, 18 sets Axles, 6 dozen Tools, 15 dozen Wrenches, 4 dozen Picks, 1 case Carriage Parts, 25 Carriage Springs, 56 pounds Malleable Castings, 96 Plows, 25 dozen Brooms, 20 dozen Pick Handles, 100 pounds Machinery, 2 Grindstones, 6 Hay-Cutters, 4 Harrows, 4 Stuffers, 12 Churns, 12 dozen Brooms, 4 bundles Wheelbarrows, 288 Broom Handles, 10 dozen Carpenters' Tools, 101 dozen Wood Handles, 360 pounds Sad Irons, 373 pounds Choppers, 3 Stuffers, 1 Lawn Mower, 25 dozen Carpenters' Tools, 6 Plows, 3 dozen Wheelbarrows, 8 Washing-Machines, 6 Mangles, 70 dozen Agricultural Tools, 3 Lawn Mowers, 150 pounds Nails, 9 dozen Handles, 10 Axes, 100 dozen Hardware, 46 dozen Tools, 3 cases and 4 bundles Carriage-Ware, 5½ dozen Carpenters' Tools, 71 pounds Oil Stone, 44 dozen Hardware, 1 case Carpenters' Tools and Shears, 2 dozen Carpenters' Tools, 295 pounds Agricultural Wrenches, 8 dozen Edge Tools, 4 Wagon-Wheels, 187 pounds Axles, 9 Carriages, 89,627 pounds Wire, 504 Plows, 48 Plows and Parts, 25 dozen Edge Tools, 10 Hatchets, 12 dozen Wood Handles, 22,439 pounds Wire, 160 Plows and Parts, 50 dozen Axes, 20 dozen Spades, 9 Scales, 5 dozen Axes, 490 dozen Wood Handles, 45 dozen Locks, 3 dozen Grindstone Fixtures, 25,000 feet Fuse, 90 dozen Brooms, 3 Pumps, 20 dozen Axes, 100 pounds Oil Stone, 6½ dozen Plated-Ware, 2 Sewing-Machines.

PER BARK WAKEFIELD, JUNE 20, 1889, FOR WELLINGTON, NEW ZEALAND.

By Mailler & Quereau.—25 cases Sewing-Machines, 1 case Whip-Handles, 7 cases Hardware, 2 cases Garden Hose, 4 cases Iron Castings, 49 packages Reaping-Machinery, 22 packages Reaping-Machinery, 200 cases Clothes-Pins.

By Ilsley, Doubleday & Co.—24 dozen Brushes.

By F. B. Wheeler & Co.—9 coils and 200 feet Hose, 7 dozen Axes, 5 cases Stoves, 1 dozen Churns, 1 case Hardware, 2 cases Castings, ½ dozen Lawn-Mowers and Handles, 2 cases Hardware, 3 boxes Nails, 1 box Hardware, 9 cases Castings, 2 cases Wringers, 2 Lawn-Mowers and Handles, 4 dozen Hammers, 1 dozen Mangles, 2 cases Hardware, 20 Pumps, 1 case Castings, 17 crates Stoves, 1 case Clocks, 12 cases Castings, 1 cases Hardware, 6 cases Castings, 2 cases Handles, 3 cases Axes, 5 boxes Tin-Ware, 14 dozen Brushes, 2 cases Hardware, 1 case Gearing, 1 case Carts, 1 box Wagon Supports, 2 packages Castings, 3 cases Hardware, 4 packages Hardware, 2 Scroll-Saws, 42 Pumps, 19½ dozen Cow-Bells, 22 packages Clocks.

By Crane & McMahon.—6 bundles Whiffletrees.

By W. H. Crossman & Bro.—2½ dozen Churns.

By Chas. B. Seabury.—1 box Dairy Implements.

By Reed & Barton.—647 pounds Plated-Ware.

By Welsh & Lea.—5 cases Iron Bolts.

By Dunbar, Hobart & Whidden.—2800 pounds Nails.

By Plumb, Burdict & Barnard.—895 pounds Iron Bolts.

By Ansonia Clock Company.—20 boxes Clocks, 15 boxes Clocks.

By Russell & Erwin Mfg. Company.—18 cases Hardware.

By W. & B. Douglas.—40 Pumps.

By McLean Bros. & Rigg.—129 Block Pulleys, 1 dozen Bird-Cages, 7 dozen Thermometers, 5 cases Hardware, 18 dozen Hammers, 18 Rubber Blocks, 41 Churns, 25 dozen Handles, 17 dozen Axes, 25 dozen Wagon Clips, 1 case Carriage-Ware, 12 packages Hardware, 35 dozen Hay-Forks, 33 packages Carriage-Ware, 15 dozen Axes, 5 dozen Axes, 5 dozen Hoes, 15 dozen Forks, 6 dozen Handles, 3 cases Granite-Ware.

By Arkell & Douglas.—1 case Harness, 5 crates Handles, 22 packages Lawn-Mowers, 10 crates Churns, 7 cases Bolts, 30 packages Hardware, 11 packages Lamp-Ware, 1 case Traps, 9 cases Fruit-Jars, 2 cases Shade-Rollers, 20 packages Hardware, 5 crates Stoves, 3 crates Churns, 5 packages Hardware.

By W. H. Crossman & Bro.—4 dozen Grindstone Fixtures, 2 dozen Grindstone Fixtures, 40 dozen Pulleys, 6 dozen Hatchets, 4 Farming-Tools, 39 dozen Axes, 400 pounds Nails, 1 box Hardware, 2 gross Axle-Grease, 51 dozen Handles, 4 packages Hay-Rakes and Parts, 2½ dozen Horse-Collars, 5 dozen Cow-Bells, 16 dozen Wrenches, 7 cases Hardware, 8 cases Hardware, 44 gross Fruit-Jars.

By R. W. Forbes & Son.—12 packages Hardware, 2 dozen Wringers, 1 case Hay-Forks, 12 dozen Hay-Fork Handles, 60 dozen Tool-Handles, 10 dozen Hay-Rakes, 500 Broom-Handles, 11 dozen Spade-Handles, 2 racks Churns, 14 Packages Churns, 12 Axles, 2 packages Hardware, 2 gross Whisk-Brooms, 12 Gross Glass-Cutters, 1 gross Thermometers, 14 dozen Wagons, 1 case Rakes, Hoes and Forks, 17 packages Hardware, 34 dozen Hoes, 8 Rakes, 15 packages Lawn-Mowers, 35 dozen Forks, 10 dozen Snaths, 42 dozen Tool-Handles, 396 dozen Tool-Handles, 500 Broom-Handles, 20 dozen Hay-Rakes, 18 racks Churns, 120 dozen Tool-Handles, 5⅜ dozen Fly-Traps, 1511 pounds Horse-Nails.

By H. W. Peabody & Co.—5 cases Carriage-Ware, 4 packages Lamp-Ware, 2 cases Shade-Rollers, 42 packages Hardware, 2 cases Bolts, 3 cases Agricultural Implements, 2 cases Axles, 9 dozen Wash-Boards, 2 cases Slates, 11 packages Lawn-Mowers, 3 packages Pumps, 6 dozen Handles, 179,247 pounds Wire, 60 dozen Handles, 2 cases Hardware, 500 Handles, 20 cases Slates, 9 packages Churns, 3 packages Pumps, 20 cases Edge Tools, 1 case Type-Writers, 176 dozen Handles, 2 dozen Churns, 12 dozen Wash-Boards, 13 packages Hardware, 4500 pounds Nails, 4 cases Agricultural Implements, 30 packages Hardware, 6½ dozen Wringers, 24 dozen Shade-Rollers, 77 dozen Handles, 1 case Plated-Ware, 1⅜ dozen Churns, 6 dozen Handles, 4 packages Hardware, 15 cases Hardware, 7 cases Hardware.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Animal and Vegetable Oils.

There have been few new features of interest it this line of trade during the past week. For that matter two transactions involving about 3200 barrels crude Whale Oil comprise about all there is to note outside of the routine business. There seems to be more steadiness to prices for Sperm, Whale and Menhaden products, and Linseed Oil continues strong, but the tendency on the balance of the list has been more or less in buyers' favor.

Linseed-Oil.—The position of the market is unchanged. Seed is still rather scarce and continues high; the make of Oil

is therefore rather below the average amount and crushers are strong on prices. An advance is considered probable, but crushers still quote 60¢ for City Raw.

Lard-Oil.—Prime, present make, has been selling at 52¢ @ 54¢, according to brand, and those figures are still quoted. The market is rather weak, however, and only small buyers are obliged to pay the highest prices above quoted.

Cotton-Seed-Oil.—The demand has improved a trifle, but neither crude nor refined Oil has been taken with sufficient liberality to give the market better tone. Mr. Henry C. Butcher, Philadelphia, president of the Southern Cotton-Oil Company, denies emphatically that the Southern company has been absorbed by the American Cotton-Oil Trust.

Whale-Oil.—The transfer of a block of 2800 barrels crude Whale-Oil that had been under treaty for some time has been effected at 28¢, and an additional lot of 400 barrels was sold at the same price in New Bedford. This leaves but 1750 barrels now in first hands. The manufactured Oils were previously jobbing at prices relatively no higher than 38¢ for crude, and manufacturers therefore adhere to previous prices for Natural and Bleached.

Menhaden-Oil.—The catch of fish has been very fair the past week, but the yield of Oil moderate. Supplies are, therefore, coming forward rather slowly, and with some export inquiry and a fairly good home outlet, prices have kept quite steady. The Light Pressed is about 2¢ lower, but Bleached Menhaden and Tanners' Oils have undergone no change.

Sperm-Oil.—Holders in the East still quote 65¢ for crude Oil, and the manufactured products remain steady, being in very fair jobbing demand. Export demand is very indifferent.

Miscellaneous.—Tallow, Cocoanut, Palm and Red Oils have undergone no change in value, and the business in the several commodities has been limited mainly to jobbing distribution. Cable advices of higher cost in Europe, together with the fact that stocks are much reduced, have served to bring about a 3¢ advance on Olive-Oil.

Paints and Colors.

The sharp decline in the price of National Lead-Trust certificates on the Stock Exchange, consequent upon the announcement that the outstanding certificates represent a par value of $83,000,000, has been the feature of chief interest in the Paint trade. That the peculiar financial methods of the "trust" are looked upon with suspicion by manufacturers and merchants of the old school is the fact, and good reasons exist for remarking that many firms and individuals connected with the Paint industry have suffered some little financial loss from the ten points decline. However, it is doubtful that the capitalization matter has any forcible bearing upon the production, sale or price of the pigment. For that matter, the financial and speculative departments are regulated by gentlemen who are in the "combine" on speculation, while the business proper is under the complete control of experienced corroders, whose whole attention is devoted to the largest possible sale of the pigment and the lowest possible prices that will admit of a good return on the actual capital invested. This may appear paradoxical, but it is the fact, nevertheless, and the probabilities are very strong that the White-Lead business will be conducted on business principles, whatever course may be followed by the arch-manipulators of certificates. Apart from the Lead Trust developments and a further decline in the price of Chalk, due to forced sales, there have been no important developments in the Paint and Color trades the past week.

White Lead.—There is a reasonably fair movement of stock into the channels of consumption. All purchases seem to be kept down to absolute requirements, however, and jobbers are particularly cautious, in view of the feeling of uncertainty as to what the "trust" may do in the way of varying from present prices, rebates, &c. For the time being previous terms are adhered to and there are no surface indications of any immediate change.

Zinc.—American Oxide of Zinc remains very steady in price and manufacturers' agents report a fairly good distribution that keeps supplies in favorable position. Foreign Zincs are moving in small quantities only at the present time, but the business passing is invariably at firm prices.

Colors.—Dry Colors in general have been rather quiet and occasional contracts by grinders for certain bulk goods cover about all that has been done outside of a fair jobbing distribution. Colors in Oil have also been quiet. Prices are showing but slight variation. Ready-mixed Paints are selling to a fair extent, but mainly in small quantities.

Miscellaneous.—Under the influence of heavy arrivals, some importers of Chalk have found it necessary to resort to what is commonly termed "slaughter" and then let several thousand tons go at from $2.25 down to $2.10, ex-ship. The cost to import is about $3. Paris White, Whiting, Barytes, Terra Alba, Talc, &c., have remained quiet, with prices barely steady.

Trade Items.

Articles of incorporation of the World Lubricating Company have been filed with the county clerk at Albany, N. Y. The object of the company is the manufacture and sale of lubricants. The capital stock is $50,000 and the incorporators are Franklin E. Howard, of Buffalo; Charles H. Phillips, of Cassadaga, and Charles Clute, of Dunkirk.

Millard Adler, of New York, has leased from J. M. Quarles and others, of Nashville, Tenn., the Mineral-Paint mines near La Vergne, and will erect machinery to cost $20,000 for excavating and preparing the Mineral Paint for shipment.

The Paint mill at Lisbon, Maine, owned by the New England Paint Company was burned on the morning of the 10th inst. The cause is supposed to have been spontaneous combustion. The loss is estimated at about $10,000. Insured for $4000.

The Bureau of Statistics monthly statistics reveal remarkably small exports of Cotton-Seed Oil from the United States during the month of May. The record gives a total of only 48,349 gallons, against 417,007 gallons during the corresponding period last year. The entire export movement for the 11 months ending May 31 involved only 2,287,392 gallons, against 4,348,855 gallons last year. The falling off in value is apparently about $750,000.

Wholesale Prices.

NEW YORK, July 17, 1889.

Animal and Vegetable Oils.

Linseed, City, raw	per gal	60	@	..
" " boiled		63	@	..
" Western, raw		58	@	59
Lard, City, Extra Winter		55	@	57
" " Prime, present make		53	@	54
" " Extra No. 1		47	@	49
" " No. 1		42	@	44
" Western, prime		52	@	53
Cotton-seed, Crude, prime		37	@	39
" " " off grades		32	@	36
" Summer Yellow, prime		47	@	49
" " " off grades		42	@	46
Sperm, Crude		65	@	67
" Natural Spring		68	@	70
" Bleached Spring		73	@	75
" Natural Winter		75	@	77
" Bleached Winter		80	@	82
Whale, Crude		..	@	40
" Natural Winter		..	@	46
" Bleached Winter		..	@	48
" Extra Bleached		49	@	50
Sea Elephant, Bleached Winter		54	@	55
Menhaden, Crude, Sound		22	@	24
" Crude, Southern		22	@	23
" Light Pressed		29	@	30
" Bleached Winter		35	@	36
" Extra Bleached		38	@	39
Tallow, City, prime		..	@	50
" Western, prime		..	@	49
Cocoanut, Ceylon		6¾	@	5¾
" Cochin		6⅞	@	6⅝
Cod, Domestic		33	@	34
" Foreign		34	@	35
Red Elaine		36	@	38
Red Saponified	₱ ℔	4¾	@	5¼
Bank	per gal	27	@	..
Straits		28	@	..
Olive, Italian, bbls		67	@	68
Neatsfoot, prime		62½	@	75
Palm, prime, Lagos	₱ ℔	5½	@	..

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test, per gal		8	@	9
" " " 15 "	"	8½	@	9½
" " summer	"	6	@	7
Cylinder, light, filtered	"	15	@	20
" dark, "	"	14	@	20
" " steam refined	"	10	@	18
Paraffine, 23½ @ 24 gravity	"	11	@	12
" 25 "	"	10	@	11
" 28 "	"	8½	@	9
" red, 21 @ 22 gravity	"	14	@	14½
" " 22½ @ 23 "	"	12	@	13

Paints and Colors.

Barytes, Prime White	₱ ton.	$16	@	20
" off-color		12.00	@	14
" Foreign floated		19	@	21
Blue, Celestial	₱ ℔	5½	@	7½
" Chinese		45	@	50
" Prussian		20	@	35
" Ultramarine		7	@	25
Brown, Spanish		½	@	1
" Vandyke, American		3	@	3½
" English		6	@	8
Black, American Drop		8	@	10
" English "		12	@	14
" Frankfort "		5	@	18
Black, Lamp, common		12	@	18
" " medium		19	@	25
" " prime		27	@	33
Carmine, No. 40, in bulk		3.10	@	..
" " in boxes or barrels		3.20	@	..
" " in ounce bottles		4.20	@	..
Chalk, in bulk	₱ ton.	2.50	@	2.75
" in bbls	₱ 100 ℔	25	@	35
China Clay, English	₱ ton.	13.50	@	18
" Southern		10.00	@	11.50
Cobalt Oxide, prep'd		2.90	@	..
" " black lots 100 ℔		2.60	@	..
" " less "		2.65	@	..
Crocus Martus, English	₱ ℔.	1¼	@	2½
" American		1½	@	2½
Green, Paris, in bulk		20	@	..
" " 170 @ 175 ℔ kegs		20½	@	..
" " small packages		22	@	26¾
" Chrome, ordinary		8	@	11
" " extra		12	@	13
" " pure		22	@	25

REBATES, &c.—Paris Green.—Rebates to buyers of 500 to 1000 ℔ during season, ½¢ ₱ ℔; to buyers of 1000 to 2000 ℔, 1¢; to buyers of 2000 to 4000 ℔, 1½¢; to buyers of 4000 to 10,000 ℔, 2¢, to buyers of 10,000 ℔ and over 2½¢. Buyers of 5 tons or over at one time receive an additional ¼¢ ₱ ℔.

Lead, American White, dry		6¾	@	7
" " in oil		7	@	7¼
" " Red		6¾	@	7
Litharge, in barrels		6¾	@	..
" " 500-℔ lots		7	@	..
" " smaller "		7¼	@	..

REBATES, &c.—White Lead. ½¢ ₱ ℔ rebate on purchases of 500 ℔ and over, if paid for within 60 days of date of invoice; terms, 60 days or a discount of 2½ % if payment within 15 days from date of invoice. Extra rebate of ½¢ ₱ ℔, payable July 1 and December 31 to buyers of a total of 10 tons pure Lead during the year.

Litharge.—Rebate of ½¢ ₱ ℔ for cash in 60 days and 2½ % additional for cash in 15 days.

Ocher, Rochelle		1.35	@	1½
" French Washed		1½	@	2½
" Dutch Washed		4½	@	5
" Oxford		6¼	@	7½
Orange Mineral, English		8½	@	9½
" French		9	@	9¾
" German		8½	@	9½
" American		8	@	8½
Paris White, English Cliffstone		1.00	@	1.10
" American		65	@	80
Red, Indian, English		5½	@	7
" American		2	@	6
" Turkey		9	@	14
" Tuscan		9	@	11
" Venetian, American	₱ 100 ℔.	90	@	1.25
" English		1.00	@	1.45
Sienna, Italian, Burnt and Powd.	₱ ℔	5	@	6½
" " Burnt Lumps		1½	@	3½
" " Raw, Powdered		5	@	6½
" " Lumps		2	@	3½
" American, Raw		1¼	@	1¾
" " Burnt and Powdered		1¾	@	1¾
Talc, French		1¼	@	1½
" American		1	@	1¼
Terra Alba, French	per 100 lb	72½	@	80
" English		80	@	85
" American No. 1		70	@	75
" American No. 2		38	@	40
Umber, Turkey, Bnt. and Powd.,	₱ ℔	3½	@	4
" Burnt, Lumps		2¾	@	3
" Raw and Powdered		3¼	@	4
" Raw, Lumps		2¼	@	2¾
" Burnt, American		1¾	@	1¾
" Raw, "		1¾	@	1¾
Yellow, Chrome		10	@	25
Vermilion, American, Lead		11½	@	13
" Quicksilver		60	@	65
" English Imported		82	@	85
" Imitation English		8	@	25
" Trieste		75	@	77
" Chinese		88	@	90
Whiting, Common	₱ 100 ℔	45	@	50
" Gilders'		60	@	65
Zinc, American, dry	₱ ℔	4¼	@	4¾
" French, Red Seal		6¼	@	....
" " Green Seal		7½	@	....
" " V. M. X		6	@	....
" Antwerp, Red Seal		6¾	@	....
" " Green Seal		7	@	....
" German, L. Z. O		5¾	@	....
" V. M. in Poppy Oil, G. Seal, lots of 1 ton and over		9⅝	@	10¼
lots less than 1 ton		9⅞	@	10⅜
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over		8½	@	9
Lots of less than 1 ton		8¾	@	9¼

DISCOUNTS.—French Zinc.—Discounts to buyers of 10-bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %; 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese	₱ ℔	35	@	40
" Prussian		20	@	45
" Ultramarine		12	@	18
Brown, Vandyke		7	@	12
Green, Chrome		8	@	13
" Paris		16	@	18½
Sienna, Raw		7	@	13
" Burnt		7	@	13
Umber, Raw		7	@	10
" Burnt		7	@	10

Glue.

Low Grade	₱ ℔	8	@	10
Cabinet		12	@	14
Medium White		13	@	15
Extra "		17	@	20
French		9	@	20
English		10	@	15
Irish		12	@	15

Murbarger's Anti-Rattler.

The accompanying illustration, Fig. 1, represents an anti-rattler manufactured by the Murbarger Mfg. Company, Indianapolis, Ind. It is made of steel, which is described as rolled to the company's order

Fig. 1.—Murbarger's Anti-Rattler.

for this specific purpose and subjected to an oil bath for tempering, by means of which it is given an especially fine temper for the use for which it is designed. In applying it to the wagon the spring is placed in the jack-clip and pushed down

Fig. 2.—Anti-Rattler, Bolt-Holder, &c.

into position. It is made in five sizes—$\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$ and $1\frac{1}{4}$ inch.

Fig. 2 represents Murbarger's Patent Combination Spring, Automatic Bolt-Holder and Anti-Rattler, combined, while Fig. 3 shows it applied for use, thus indicating clearly its utility. Two sizes of pins go with each pair, and take the place of the bolt regularly used. The ease with which it is applied and changed when desired from pole to shafts, the efficiency of

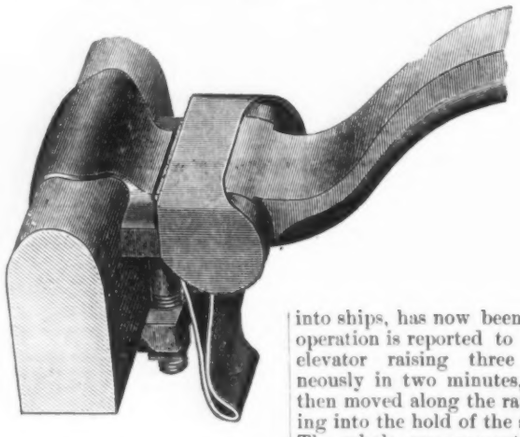


Fig. 3.—Anti-Rattler, Bolt-Holder, &c., in Use.

its operation as an anti-rattler, and its security as a bolt-holder, are points made in regard to them.

There are now in the South more than 200 cotton-seed-oil mills, with an aggregate capital of about $20,000,000. A few years ago cotton seed was supposed to be chiefly valuable either as a fuel or fertilizer. Most of the new mills are independent of the trust.

The Dirigo Folding Anchors.

This anchor has been patented by S. S. Laughlin, of Thomas Laughlin & Son, Portland, Maine, by whom it is manufactured and put on the market. Fig. 1 represents it open and Fig. 2 closed. It will thus be seen that both the stock and flukes fold up and are kept in position either open or closed, as desired, by the same pin or key. It is referred to as having all the holding qualities and ship-

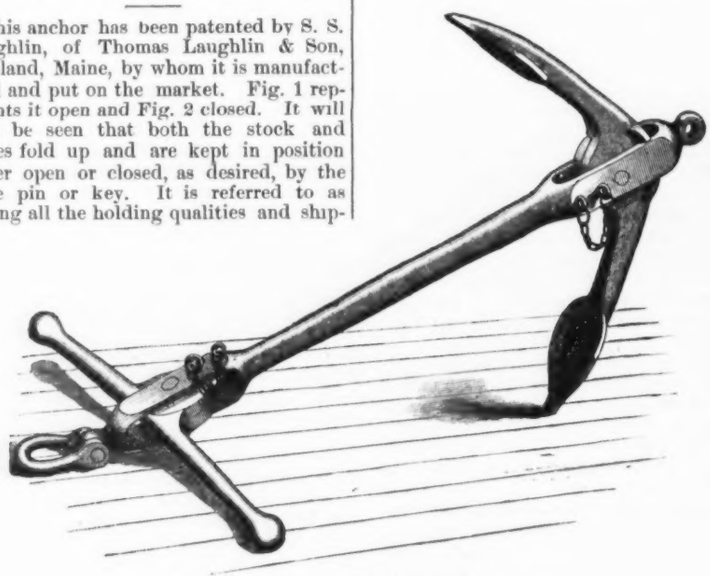


Fig. 1.—The Dirigo Folding Anchor, Open.

shape appearance of the regular anchor, with the great advantage that it can be made compact for storage when not in use. It is made in a number of different sizes. We are advised that while it has been on the market but a short time it is

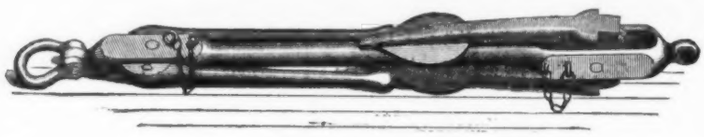


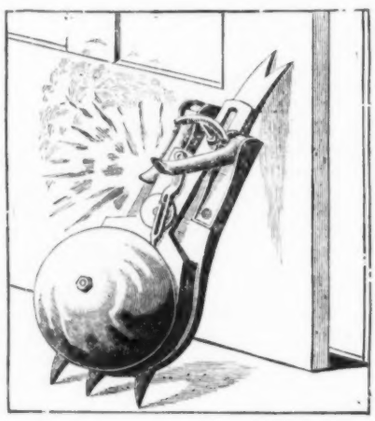
Fig. 2.—The Dirigo Folding Anchor, Closed.

having a satisfactory reception. It is certainly an interesting addition to their extensive line of boat anchors.

The great elevator built on the quay at Lulea by the Swedish-Norwegian Railway Company, for loading iron ore direct into ships, has now been finished, and its operation is reported to be a success, the elevator raising three trucks simultaneously in two minutes, the same being then moved along the rails to shutes leading into the hold of the ship and emptied. The whole arrangement is said to be so perfect that a ship of some 2500 tons may be loaded in a day. In the engine-room are two engines of 60 horse-power each, steam being supplied by three boilers. The engines pump water into two accumulators, whence it flows through underground pipes to the elevator, which it will raise with a load of 120 tons on it—the hydraulic pressure being equal to 20 atmosperes, or at the rate of 300 pounds per square inch.

New Patent Burglar-Alarm.

The accompanying illustration represents a new burglar-alarm manufactured by Safety Alarm Company, 61 and 63 Mulberry street, Newark, N. J., for whom Tommins & Adams are agents for export and home trade, 116 Chambers street, New York. The illustration indicates in a general way the design and use of the alarm, its object being to furnish a simple and portable burglar-alarm which can be conveniently carried in the pocket or valise when traveling and can be readily and easily applied to a door, giving a decided alarm should the door be tampered with. It is described as automatic in construction, so that it is only necessary to place it in a leaning position against the door to prevent intrusion. The slightest attempt

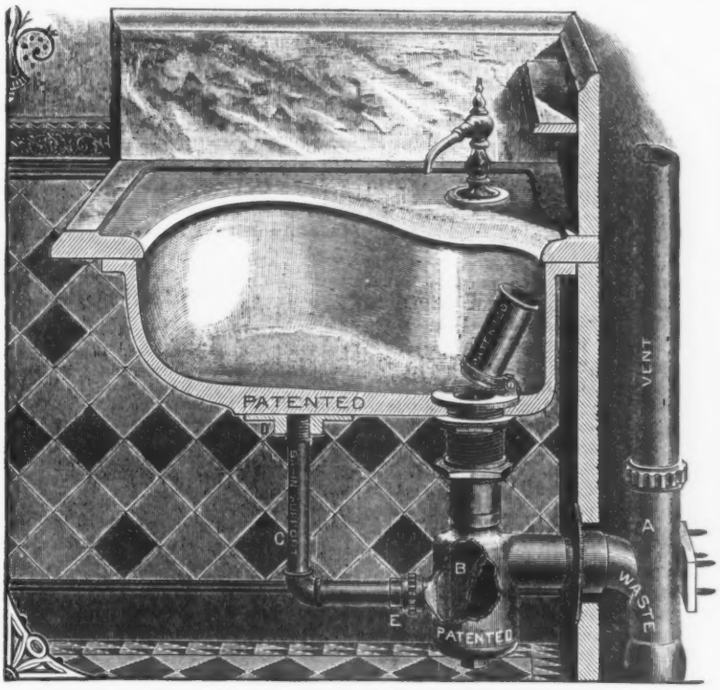


New Patent Burglar-Alarm.

to open the door causes the bell to ring violently, dropping the hammer on explosives, making two separate loud reports, and at the same time forcing the steel bar down until it becomes a perfect lock.

Barrett's Recessed Wash-Bowl.

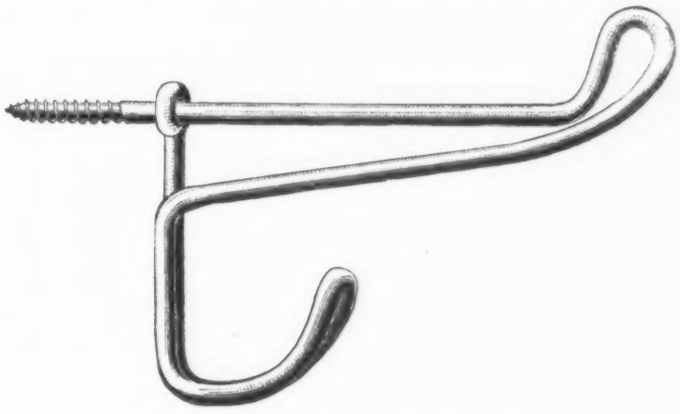
James Barrett, 193 Tremont street, Boston, Mass., manufactures and offers to the trade Barrett's recessed bowl, basin waste, combination trap and basin support, a sectional view of which is presented in the annexed cut. The brass waste and overflow, it will be noticed, has no stem or rod passing through the marble slab, thus permitting the basin slab to be cut out the shape of the recess. Furthermore, it permits the recess, which is larger than ordinary, to be readily kept clean. The waste is operated by merely tilting back the stand-pipe to the position shown in the cut. As the stand-pipe is made, being hinged at the back, there are no parts to turn or work loose. The brass trap B is immediately under the waste, so that there is no long line of pipe to become foul. A single screw-joint connects the trap with the waste-pipe and vent. This joint, furthermore, is furnished with ears for screws, which when fastened to the wall is said to make a very strong and solid connection, the special feature of strength being also claimed for the trap, which is screwed in place. The solidity of these attachments enables the manufacturer to attach a basin support to the trap, as shown at C, and consequently doing away with the leading of brass clamps into the marble slabs. The bowl is readily taken out by disconnecting the union at E and the coupling connecting trap and waste fixture. The combination, it is claimed, enables the plumber to take the pattern for the slab in a very short time and be sure of its being exact, as the bowl and its fixture are entirely independent of the slab. This, it is pointed out, will be especially convenient when there are a number of bowls under the same slab.



Barrett's Recessed Wash-Bowl.

Crescent Wire Coat and Hat Hook.

The illustration given below represents the Crescent Wire Coat and Hat Hook, which is made on Corton's patent by Reading Hardware Co., Reading, Pa., and 81 Reade street, New York. It will be seen that the hook is made from a continuous piece of wire, and the manufacturers invite comparison with other hooks as to strength, durability and appearance. The hooks are made in different styles of finish, coppered, japanned and tinned, the material being Bessemer wire. They are also furnished in brass, polished and lacquered.

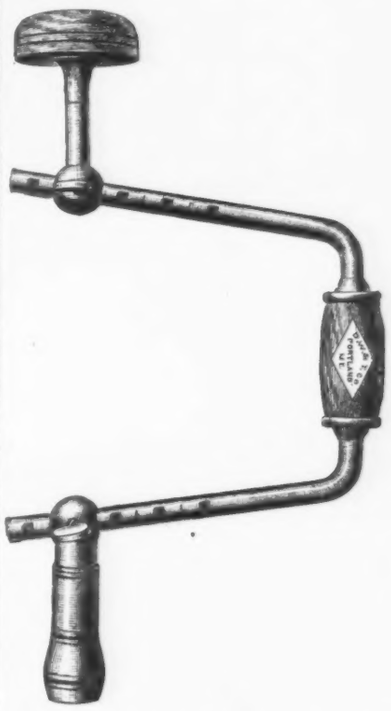


Crescent Wire Coat and Hat Hook.

Thomas A. Edison has been at Bechtelsville, near Reading, Pa., for nearly a week, looking after the experiments of his patent iron-ore separator, which is expected to work a revolution in ore-mining. Mr. Edison is accompanied by a number of New York capitalists. He is at the head of a company who have purchased and leased extensive ore lands near Bechtelsville, on which large buildings have been erected. The experiments have now been carried on about four months, and the entire success of Mr. Edison's invention is now said to be assured. The rock containing the ore, after passing through the crusher and being broken to about the size of an egg, is conveyed in small buckets and dumped into a large hopper. From here it drops out in a small stream down an incline, and passes within a few inches of a powerful magnet. This is so heavily charged as to draw the iron ore from its course into one channel, and the rock and other foreign elements contained in the ore pass through another channel.

The Extension Brace-Bit.

This new brace is manufactured by the Diamond Wrench and Tool Company, Portland, Maine, and is represented in the accompanying illustration, which shows its special features. By loosening the thumb-screws the head and chuck will move freely along the rod, so that it can be instantly adjusted to make a brace either 8, 10, 12, 14 or 16 inch sweep. The sweep is described as made of a steel rod and the head and chuck as being steel castings. All the parts are made interchangeable. The company point out that by equally dividing the distance—that is, setting the head for a 16-inch sweep and the chuck for an 8-inch sweep—by turning with both hands a crank motion is obtained doubling the power and the speed. In addition to the convenience resulting from the construction of this brace the manufacturers allude to its quality and finish. We are also advised that they are making a full line of plane and ratchet braces in connection with other tools.



The Extension Bit-Brace.

Immigration into the United States during the first quarter of 1889 numbered 71,000, as against 87,000 in the first quarter of 1888.

Washington News.

(*From Our Regular Correspondent.*)

WASHINGTON, D. C., July 16, 1889.

Assistant Secretary Tichenor, who has the lead-ore question still before him, has been giving the subject consideration as his other official duties will admit. There seems to be some doubt as to the authority of the Department to make so radical a change as the declaration of an entirely new form of procedure in the collection of duties. It has always been in the power of the Secretary to construe the meaning or application of a statute, but it has never been in his power to change the law. To say that ore with a certain percentage of lead is lead ore, and that the same ore with a certain relation of silver to lead is silver ore, is only in the power of Congress. While there is a disposition to check a palpable violation of the law in the classification of lead ore as silver ore to secure the benefit of the free list, the subject is not likely to end there. The talk of parties on either end of the controversy would indicate a determination on the part of the losing side to resort to litigation.

There is no doubt of this question being one of final adjustment in any new tariff measure which may be evolved out of the economic discussion of the Fifty-first Congress. This seems to be the only decisive form of settlement. The lead-ore controversy is one of a number of issues which the Department has before it, and which add to the demand for very radical legislation in order to quiet antagonistic interests and give the Department as well as trade a rest from these incessant agitations.

The Treasury officials are giving the Senate tariff bill careful attention in anticipation of a very thorough presentation of the whole question by Secretary Windom in his report to Congress and by the President in his annual message. They are both anxious to make this one of the leading features of the Administration. Senator Allison before his departure for Iowa had a lengthy conference with Secretary Windom and Assistant Secretary Tichenor on tariff matters. The Senator expressed his desire to go on with that work, so as to pass a bill which would be satisfactory to the people and put the Republican party on the advanced grounds of protection. He thought that this should be done by the present Congress.

Secretary Tracy is very well satisfied with the performances of the new ships for the navy. After the Baltimore's test of speed and power is concluded the Philadelphia will be launched, and still another fine ship will be added to the fleet of fast steel cruisers. The Secretary of the Navy has taken summer quarters at the Country Club, and is at the same time solving problems of naval administration and reconstruction. In the former branch the Navy Department has had a very thorough shaking up. The assignment of work throughout the different bureaus has been very radically changed. It is claimed that the change is for the better dispatch of business, as the new method is simpler. The Bureau of Navigation, which had a corner on all the fancy branches of naval work under the new rule, has been confined simply to the *personnel* of the navy. Other bureaus have had a reorganization in the same line of application of duties to the peculiar work of the bureau.

The opponents of the reform movement characterize the order as an attempt to pattern our system after the Admiralty branch of foreign governments. Secretary Tracy is getting the machinery of his department adapted to the enlarged and modern requirements of a navy built according to the more intricate details of naval science as we find it to-day.

A Canadian Ship Railway.

The Chiquecto marine railway, now under construction, to connect the Gulf of St. Lawrence with the Bay of Fundy, is apparently destined to become an important engineering work. The object is to afford a direct transit for ships between St. Lawrence ports and ports in the direction of St. Johns, N. B., Portland, Boston and New York, thus saving a detour of about 600 miles around the dangerous coast of Nova Scotia. It will also add to the value of the St. Lawrence route by enabling vessels from the West to reach the Atlantic by a short cut through the Bay of Fundy without breaking bulk. The cost of the work is estimated at $5,000,000. The shares were readily taken in the London market, and the company are bound to complete the railway by July 1, 1892, receiving a subsidy from the Dominion Government of $170,602 per annum for 20 years. The line of railway is perfectly straight, and the gradients will be virtually level, none exceeding the ratio of 1 in 2000. Its length is 17 miles. There is to be a dock at each end of the line, where vessels will be received in quiet water. In each of these docks there will be erected a hydraulic ship-lift, somewhat similar in construction to those in operation at Malta and at the Victoria docks on the Thames, where, according to a letter from the English engineer, Sir James Bruniess, sea-going vessels are daily economically lifted and lowered. The proposed hydraulic lifts in the docks at the termini of this railway are specially designed to raise loaded vessels with a tonnage of 1000 tons.

A ship carriage or cradle, resting on wheels and provided with keel-blocks and bilge-guards, will be first placed on the rails, which rest on the gridiron of the lift. This gridiron, which is actually a portion of the railway, will be lowered with the cradle upon it and immersed in the water to the bottom of the dock. The vessel which it is proposed to transport will then be floated exactly over the cradle, the keel and bottom of the vessel corresponding with the line of blocks and cushions previously arranged to receive her. The arrangement of the blocks and cushions will vary according to the lines of the various craft to be transported. Once in the proper position the gridiron will be raised to the level of the keel, and then the blocks will be hauled in while under water close to the vessel's bilges and sides. A rack with pawls at the back of the blocks will prevent any movement. The operation of raising the whole mass will then begin by means of the hydraulic presses arranged on both sides of the gridiron. The length of stroke in each lift is 42 feet. The engines and presses are calculated to raise the maximum-sized vessel, with cargo, to the level of the railway in the space of ten minutes. When the lifting process is finished the rails on the gridiron will connect with the railway track on *terra firma*. The gridiron will then be locked securely, so that by means of an accumulator and another hydraulic apparatus the cradle and ship together may be hauled off the lift and thus transferred to the railway, where they will be ready for transportation by means of locomotives. The principle of the project is, therefore, a combination of the hydraulic ship-lift as employed at Malta, at New York by the New York Balanced Dock Company, and at Bombay by the Peninsular and Oriental Steam Navigation Company, with a marine slip or railway extended. Two locomotives will haul the largest vessel to be transported at the rate of ten miles an hour. There will be four lines of steel rails of 90 pounds weight per lineal yard. The construction thus far is of a thorough and substantial character.

In the opinion of the leading merchants, no public work now proceeding in the Dominion of Canada will be so far-reaching as this marine railway in its beneficial consequences, not only to Canada, but to the whole of the North Atlantic Coast of North America.

Bennett & Talbott, contractors, of Greensburg, Pa., have received the contract for the erection of 550 coke ovens, situated about six miles above the new Fairmount and Clarksville Railroad, in West Virginia. The contract was led by ex-Senator Camden, who is the president of the road. The work will commence at once and be pushed to completion.

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CURRENT HARDWARE PRICES.

JULY 17, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.—

Caps, Percussion, ℔ 1000—

Hicks & Goldmark's
F. L. Waterproof, 1-10's.....50¢
E. B. Trimmed Edge, 1-10's....65¢ } 25 @
E. B. Grnd. Edge, Cent. Fire, 1-10's.70¢ } 25 & 7½ %
Double Waterproof, 1-10's...$1.40
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B.....30¢

Union Metallic Cartridge Co.
F. C. Trimmed.....50¢
F. L. Ground.....65¢ } 25 @
Cent. Fire Ground.....70¢ } 25 & 7½ %
Dbl. Waterproof.....$1.40
Dbl. Waterproof, in 1.10's...$1.40
S. B. Genuine Imp..orted.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges.
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—
First quality, 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Star, Club, Rival and Climax brands, 20&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&5&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25

Shells Loaded—
A. M. Co. List No. 19, 1887....40@40&10%

Wads—
U. M. C. & W. R. A.—B. E., 11 up..$2.00
U. M. C. & W. R. A.—B. E., 9&10.. 2.30
U. M. C. & W. R. A.—B. E., 7&8... 2.60
U. M. C. & W. R. A.—P. E., 11 up.. 3.10
U. M. C. & W. R. A.—P. E., 9&10.. 4.00
U. M. C. & W. R. A.—P. E., 7&8... 4.00
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80

Anvils.—

Eagle Anvils, ℔ 10¢..... ...20@20&5%
Peter Wright's.....9½¢
Armitage's Mouse Hole.....8¾¢
Armitage's Mouse Hole, Extra.11½@11½¢
Trenton.....9½@9½¢
Wilkinson's.....9½@11¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%

Apple Parers—

Advance.....℔ doz $4.75
Antrim Combination.....℔ doz 5.50
Baldwin.....℔ doz 5.25
Champion.....℔ doz 7.25
Daisy.....℔ doz 3.75
Eureka, 1888.....each 17.00
Family Bay State.....℔ doz 12.00
Favorite.....℔ doz 5.00
Gem.....℔ doz 5.25
Gold Medal.....℔ doz 4.00
Ideal.....℔ doz 4.00
Improved Bay State.....℔ doz 30.00
Little Star.....℔ doz 4.00
Monarch.....℔ doz 13.50
New Lightning.....℔ doz 5.50
Oriole.....℔ doz 4.00
Penn.....℔ doz 4.00
Perfection.....℔ doz 4.00
Pomona.....℔ doz 4.00
Rocking Table.....℔ doz 5 25
Turntable.....℔ doz 4.50
Victor.....℔doz 13.50
Waverly.....℔ doz 4.00
White Mountain.....℔ doz 4.50
72.....℔ doz 4.25
76.....℔ doz 5.75
78.....℔ doz. 6.50

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co. } 70%
French, Swift & Co. (F. H. Beecher, Rockford Bit Company.
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ℔ set, 32½ quarters, No. 5, $5; No. 30, $3.50..20%
Lewis' Patent Single Twist.....45%
Jennings' Augers and Bits.....25%
Imitation Jennings' Bits.....60@60&5%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....50&10@60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auge Bits.....10%

Hollow Augers—
Ives' } 33⅓ @
French, Swift & Co. } 33⅓&10%
Douglass'
Bonney's Adjustable, ℔ doz $48...40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%

Expansive Bits—
Clarks' small, $18; large, $26...35@35&5%
Ives' No. 4, ℔ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common ..... ℔ gross $2.75@$3.25
Diamond.....℔ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ℔ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30&30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—

Sewing, Brass Fer. ℔ gr, $3.50.....45&10%
Pat. Sewing, Short. $1.00 ℔ doz.....40&10%
Pat. Sewing, Long.....℔ doz $1.20
Pat. Peg, Plain Top. ℔ gr $10.00...45&10%
Pat. Peg, Leather Top. ℔ gr $12.00.45&10%

Awls, Brad Sets, &c—

Awls, Sewing, Common ℔ gr $1.70, 35%
Awls, Should. Peg. ℔ gr $2.45, 40@40&10%
Awls, Pat. Peg...℔ gr 63¢ ... 40@40&10%
Awls, Shouldered Brad..2.70 ℔ gr.....35%
Awls, Handled Brad...$7.50 ℔ gr.....45%
Awls, Handled Scratch ℔ gr, $7.50..35&10%
Awls, Socket Scratch. ℔ doz, $1.50.25&30%

Awl and Tool Sets—

Aiken's Sets, Awls and Tools, No. 20, ℔ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12. 2, $18.....25%
Henry's Combination Haft...℔ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%

Axes—

Makers' and Special Brands—
First quality ..... ℔ doz $6.00@$6.50
Others ..... ℔ doz $5.50@$5.75

Axle Grease—

Fraser's .....Keg ℔ ℔ 4¢, Pail ℔ ℔ 5¢
Fraser's, in boxes.....℔ gr $9.50
Dixon's Everlasting, in bxs...℔ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Lower grades, special brands, ℔ gr $5.50@$7.00

Axles—

No ..... 4¢@4½¢, No. 2 5½¢@5½¢
No. 14.....55&5%
No. 18.....47½%
Nos. 20 22.....70%
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33⅓%
Over 10 sets.....33⅓&5%

Bag Holders.—

Sprengle's Pat.....℔ doz $18.....60%

Balances—

Spring Balances.....50%
Common 24-℔ .....℔ doz $1.50.....50%
Chatillon's Spring Balances.....50%
Chatillon's Circular Spring Balances.60%

Bells—

Hand—
Light Brass.....70&10 @ 75%
Extra Heavy.....60&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....℔ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths' .....60@60&5%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70&10%
Standard.....70&70&5%
Extra.....60&5@60&10%
N. Y. B. & P. Co., Carbon.....60&10&5%
N. Y. B. & P. Co., Diamond.....50&10%

Bench Stops—

Morrill's.....℔ doz $9, 50%
Hotchkiss's.....℔ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's..... ...℔ doz $3.....10%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—

Extension,
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

Blind Adjusters—

Domestic.....℔ doz $3.00, 33⅓%
Excelsior.....℔ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20@20&10%

Blind Fasteners—

Mackrell's, ℔ doz, $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ℔ gr..60&10%
Van Sand's Old Pat., $15.00 ℔ gr..55&10%
Washburn's Old Pattern, ℔ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008, ℔ gr.....$9.00
Security Gravity, ℔ gr..... .....$9.00

Blind Staples—

Barbed, ½ in. and larger.....℔ ℔ 7½@8¢
Barbed, ¾ in.....℔ ℔ 8½@9¢

Blocks—

Ordinary Tackle, list May 20, 1889, 40&10&50%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Bolts—

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's ..60&10%
Wr't Shutter, Brass Knob, " ...40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush, Com'n " ...55&10%

Carriage, Machine, &c.—
Com. list June 10, '84.....75&10&2%
Genuine Eagle, list Oct., '84.....75&10%
Phila. pattern, list Oct. 7, '84, 75&10 @ 75&10&5%
R.B.&W., old list 70%
Machine, according to size.....80@80&5%
Bolt Ends, according to size...80@80&5%

Tire—
Common, list Feb. 28, '83.....70%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83..... ...70%
Phila., list Oct. '84.....82½%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84 ...75&10%
American Screw Company:
Norway, Phil., list Oct. 16, '84....75&10%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84..... .....82½%
Bay State, list Feb. 28, '83.. .....70%
R.B.&W., Philadel., list Oct. 16, '84...82½%

Stove and Plow—
Stove. 65%
Plow.....60&5%
R. B. & W., Plow.....55%

Borax.....℔ ℔ 9½@10½¢

Boring Machines—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10
Jennings	5.50	6.75	45@45&10
Other Machines	2.35	2.75	net
Phillips' Patent with Augers	00	7.50	.....

Bow Pins—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co's ...$17 and $18.....60&10%
Peck, Stow & W. Co. 50&10&50&10&5%

Braces.—

Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Barker's.
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Osgood's Ratchet.....40&10@50%
Spofford's.....50&5&50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60@5@60&10%
Barber Ratchet.....60@5@60&10%
Barbers.....60@5%
Spofford.....60@5@60&10%
Common Ball, American.....$1.00@$1.10
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Amidon's
Barker's Imp'd Plain.....75&10 @80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
P. S. & W..... .....50&10%

Brackets—

Shelf plain, Sargent's list, 55&10@55&10&10%
Shelf, fancy, Sargent's list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods.....87½

Broilers—

Henis' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50

Buckets—See Well Buckets and Pails.

Bull Rings—

Union Co. Nut.....55%
Sargent's.....66⅔&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Butcher's Cleavers—

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P. S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Butts—

Brass—
Wrought Brass.....75@75&10%
Cast Brass, Tichout's.....33⅓%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint..... . 33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60&5%
Fast Joint, Broad.....55&10&5@60&10%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts..... } ..70&10
Mayer's Hinges..... } @75%
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad..... } ..70&10
Table Butts, Back Flaps, &c..... } @75%
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts. 50%

Calipers—

See Compasses.

Calks, Toe—

Gautier.....℔ ℔ 5½¢@6¢
Dewicks (Burke).....℔ ℔ 5½¢@6¢

Can Openers—

Messenger's Comet.....℔ doz $3.00, 25%
American.....℔ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....℔ doz $3.75, 20%
No. 4 French.....℔ doz $2.25, 55@60%
No. 5, Iron Handle.....℔ gr $6.00, 45@50%
Eureka.....℔ doz $2.50, 10%
Sardine Scissors.....℔ doz $2.75@$3.00
Star.....℔ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50 50&10&10%
World's Best, ℔ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ℔ doz $3.00.....35&5%
Domestic, ℔ doz $2.50.....15%
Champion ℔ doz $2.00..... 50

Cards—
Horse & Curry.....10&10@10&10&10%
Cotton.....10@10&10%
Wool.....10@10&10%

Carpet Stretchers—
Cast Steel, Polished.....₱ doz $2. 5
Cast Iron, Steel Points.....₱ doz 80¢
Socket.....₱ doz $1.75
Bullard's.....25@25&10%

Carpet Sweepers—
Bissell No. 5.....₱ doz $17.00
Bissell No. 7 New Drop Pan.₱ doz $19.00
Bissell, Grand.....₱ doz $36.00
Grand Rapids.....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20,00
Magic.....₱ doz $15.00
Jewel.....₱ doz $17.00
Improved Parlor Queen, Nickeled.....₱ doz $27.00
Japanned.....₱ doz $24.00
Excelsior.....₱ doz $22.00
Garland.....₱ doz $18.00
arlor Queen.....₱ doz $24.00
Housewife's Delight.....₱ doz $15.00
Queen.....₱ doz $16.00
Queen, with band.....₱ doz $18.00
King.....₱ doz $30.00
Weed, Improved.....₱ doz $18.00
Hub.....₱ doz $16.00
Cog-Wheel.....₱ doz $16.00
Conqueror.....₱ doz $22.00
Easy.....₱ doz $22.00
Monarch.....₱ doz $22.00
Goshen.....₱ doz $21.00
Advance.....₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2.....₱ doz $16.00
American.....₱ doz $15.00
Grand Republic.....₱ doz $35.00

Cartridges—
See Ammunition.

Casters—
Bed..... } Brass....55@55&10%
Plate..... } Others...60@60&10%
Shallow Socket.....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix)....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—
Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....50&10%

Chain—
Trace, 6½-10-2, exact, ₱ pair, $1.03.....50&10@50&10&5%
Trace, 6½-10-3, exact, ₱ pair 92¢.....50&10@50&10&5%
Trace, 7-10-2, exact, ₱ pair $1.11.....50&10@50&10&5%
Note.—Traces, "Regular" sizes, 3¢ net ₱ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, List Nov. 1, 1884 50&10@50&10&5%
American Coil, in cask lots, 3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾ $8.25 6.00 5.50 4.25 4.10 3.90 3.60 3.40
Less than cask lots, add ½¢@½¢₱ ₱.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter, Hitching and Breast 50&2%
Covert Traces.....35@2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ₱ 5½@6¢
Jack Chain, Iron.....75@75&5%
Jack Chain, Brass.....70@70&5%

Chalk—
White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—
See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W..... } 75&10 @ 75&
New Haven..... } 10&5%
Witherby.....
Mix.....
Ohio Tool Co.....
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to £
Buck Bros.....30%
Cold Chisels, ₱ ₱.....16@19¢

Chucks—
Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Balz Pat.....25%
Skinner's Pat. Drill Chucks.....30%
Skinner's Independent Lathe Chucks.40%
Skinner's Pat. Comb. Chuck.....40%

Clamps—
R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Gray's.....20%
Adjustable, Lambert's.....20%
Adjustable, Snow's.....40&5%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....20&10%
Stearn's Adjustable Cabinet and Corner.....20&10%
Cabinet, Sargent's.....66⅔&10%
Carriage Makers', Sargent's.....70&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises

Clips—
Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16..65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought Iron Felloe Clips.....₱ ₱, 5½¢
Steel Felloe Clips.....₱ ₱, 5¢
Baker Axle Clips.....25%

Cockeyes.....50%

Cocks, Brass.
Hardware list.....50&2%

Coffee Mills—
Box and Side, List Jan. 1, 1888....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Compasses Dividers, &c—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's Spring Calipers and Dividers 25&10&10%
Lock Calipers and Dividers.....25&10%
Combination Dividers.....25&10%

Coopers' Tools—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%

Corkscrews—
Humason & Beckley Mfg. Co..40@40&10%
Clough's Pat.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Corn Knives and Cutters—
Bradley's.....10%
Wadsworth's.....25%

Cradles—
Grain.....50&2%

Crayons.
White Crayons, ₱ gr 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₱ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₱ gr, $2.50.....25%
See also Chalk.

Crow Bars—
Cast Steel.....₱ ₱ 4¢
Iron, Steel Points.....₱ ₱ 3½¢

Curry Combs—
Fitch's.....50&10@50&10&10%
Rubber per doz $10.00.....20%
Perfect.....50%

Curtain Pins—
Silvered Glass.....net
White Enamel.....net

Cutlery—
Beaver Falls & Booth's.....33⅓%
Wostenholme.....$7.75 to £

Dampers, &c—
Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Dividers—
See Compasses.

Dog Collars—
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

Door Springs—
Torrey's Rod, regular size....₱ doz $1.30
Gray's, ₱ gr., $20.00.....20%
Bee Rod ₱ gr., $20.00.....20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30.....40&10&50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10%60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's....No. 1, ₱ doz, $18.00; No. 2, $15.00.....50%
Rubber, complete, ₱ doz, $4.50.....55&10%
Hercules.....50%
Shaw Door Check and Spring.25@30@35%

Drawing Knives—
Witherby.. } 75&10@ 75&10
P. S. & W.... } &5%
Mix...
New Haven.....
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Warrens.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50.20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5%
Ratchet, Whitney's.....20&10%
Ratchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30 %
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools...$1.75@$1.85

Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits

Drill Chucks.—See Chucks.

Dripping Pans—
Smallsizes,.....₱ ₱ 6¾¢
Large sizes.....₱ ₱ 6¼¢

Egg Beaters.
Dover.....₱ doz $1.50
National, ₱ doz $4.50.....33⅓%
Family (T. & S. Mfg. Co.), ₱ gro $17.00@$18.00
Duplex (Standard Co.).....₱ gro $15.00
Rival (Standard Co.).....₱ gro $12.00
Large Duplex (Standard Co.), ₱ doz $4.50
Triumph (T. & S. Mfg. Co.), ₱ gro $10.50@$11.50
Advance, No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $15.00
Ayres' Spiral.....₱ gro $5.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

Egg Poachers—
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

Electric Bell Sets.—
Wollensak's.....20%
Bigelow & Dowse.....20%

Emery— No. 4 to 40 gr. | No. 54 to 150 gr. | Flour, CF F FF.
Kegs, ₱ ₱.....4½¢ | 5 ¢ | 2½¢
½ kegs, ₱ ₱.....4¾¢ | 5½¢ | 2¾¢
¼ kegs, ₱ ₱.....5 ¢ | 5½¢ | 3 ¢
10-₱ cans, 10 in case.....6 ¢ | 6½¢ | 5 ¢
10-₱ cans, less than 10.....10 ¢ | 10 ¢ | 7½¢

Enameled and Tinned Ware—
See Hollow-Ware.

Escutcheon Pins—
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₱ doz $50.00.....20&10%
Lane's, ₱ doz $36.00.....25&10%
Victor, ₱ doz $36.00.....25 &10%

Felloe Plates.....₱ ₱ 6@6½¢

Fifth Wheels.—
Derby and Cincinnati.....45&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers, best brands 60&10@60&10&10%
Fair brands.....60&10&10@70%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60x10@60&10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Imported—
J. & Riley Carr....List, April 1, 1883, 15%
J. & Riley Carr Horse Rasps.....10%
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25&30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fluting Machines—
Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.. $3.60 each }
Eagle, 3½-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in. $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₱ doz $15.30.....40%
Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....40%
Clark's Hand Fluter, ₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
Buffalo.....₱ doz $10.00.....10%

Fluting Scissors—.....45%

Fodder Squeezers—
Blair's.....₱ doz $2.00
Blair's "Climax".....₱ doz $1.25

Forks—
Hay, Manure, &c., Asso. List.....65%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Freezers, Ice Cream—
Buffalo Champion.....65&65&5%
Shepard's Lightning.....65 @ 65&5%
White Mountain.....50&20&5%
New Arctic.....50&40&5%
American.....60%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless and Giant.....60&10
Zero and Pet.....65&10
Boss.....65&10&10

Fruit and Jelly Presses—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ doz $2.50
Shepard's Queen City.....40%

Fry Pans—
High List.....75&5@75&10
No..... 0 | 1 | 2 | 3 | 4
₱ doz..$3.75 | $4.70 | $5.30 | $5.95 | $6.55
No..... 5 | 6 | 7 | 8
₱ doz.....$7.50 | $8.75 | $10.00 | $11.25
Low List.....65&10%
No..... 0 | 1 | 2 | 3 | 4
₱ doz..$3.00 | $3.75 | $4.25 | $4.75 | $5.25
No..... 5 | 6 | 7 | 8
₱ doz.....$6.00 | $7.00 | $8.00 | $9.00

Fuse— ₱ 1000 ft
Common Hemp Fuse,for dry ground.$2.70
Common Cotton Fuse,for dry ground 2.85
Single Taped Fuse, for wet ground.. 4.25
Double Taped Fuse, for very wet gr. 5.40
Triple Taped Fuse, for very wet gr. 6.50
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gauges—
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50&50&5%
Wire, Brown & Sharpe's.....10&20%

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₱ gr $5.00
Double Cut, Shepardson's.....40&45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₱ gr $12.....25@25&5%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Grindstones—
Small, at factory.....₱ ton $7.50@9.00

Grindstone Fixtures—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%

Hack Saws.—
See Saws.

Halters—
Covert's, Rope, ½-in. Jute.....50&2%
Covert's, Rope, ½-in. Hemp.....40&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85..... } List Jan. 15, '87
Buffalo Hammer Co.....
Humason & Beckley..... } 50@50&10%
Atha Tool Co.....
Fayette R. Plumb.....40&10@50%
C. Hammond & Son.....40&10@50%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 ₱ and under..... ₱ ₱ 40¢ } 60&10
3 to 5 ₱..... ₱ ₱ 38¢ } &10 @ 70%
Over 5 ₱..... ₱ ₱ 30¢ }
Wilkinson's Smiths.....10½¢@11¢₱ ₱

Handcuffs and Leg Irons—
R. I. Tool Co., Handcuffs, $15.00₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25

Handles—
Iron, Wrought or Cast—
Door or Thumb.
Nos..... 0 | 1 | 2 | 3 | 4
Per doz....$0.90 | 1.00 | 1.18 | 1.35 | 1.50
60@60&10%
Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88.....net
Barn Door, ₱ doz $1.40.....10&10%
Chest and Lifting.....70%
Handles, Wood—
Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50
Hickory Firmer Chisel, large. ₱ gr 5.00
Apple Firmer Chisel, ass'd... ₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd.. ₱ gr 3.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
J. S. Smith & Co.'s Pat File.....50%
File, assorted.....₱ gr 2.75 } 40@
Auger, assorted.....₱ gr 5.00 } 40&10%
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass'.....₱ set $1.25
Pat. Auger, Swau'.....₱ set $1.00
Hoe Rake Shovels &c.....50&10%

Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₱ pair, 28¢; No. 3, 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢... 60%
Champion....15¢

Hangers—
Barn Door, old patterns...60&10&10@70%
Barn Door, New England..60&10&10@70%
Samson Steel Anti-Friction....55%
Orleans Steel....55%
Hamilton Wrought Wood Track....55%
U. S. Wood Track....65%
Champion....60&10%
Rider and Wooster, Medina Mfg. Co.'s list....70%
Climax Anti-Friction....60%
limax Anti-Friction for Wood Track.55%
Zenith for Wood Track....55%
ed's Steel Arm....50%
allenge, Barn Door....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00....50&2%
Cheritree....50&10%
Kidder's....50&10@60%
The Boss....60&10%
Best Anti-Friction....60&10%
Duplex (Wood Track)....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00....50&5@50&10%
Cronk's Pat., No. 4, $12.00; No. 5, $14.40; No. 6, $18.00....50&15@60%
Wood Track Iron Clad, ₱ ft. 10¢....50 &15@60%
Carrier Steel Anti-Friction....50@50&5%
Architect, ₱ set $6.00....20%
Eclipse....20&10%
Felix, ₱ set $4.50....20%
Richards'....30@30&10%
Lane's Steel Anti-Friction....50%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat....20@20&10%
Stearns' Anti-Friction....20@20&10%
Stearns' Challenge....25&10@25&10&10%
Faultless....40@40&5%
American, ₱ set $6.00....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢....40%
Paragon, Nos. 1, 2 and 3....40&10%
Paragon, Nos. 5, 5½, 7 and 8....20&10%
Crescent....60@60&10%
Nickel, Cast Iron....50%
Nickel, Malleable Iron and Steel....40%
Scranton Anti-Friction Single Strap..33⅓%
Scranton Anti-Friction Double Strap..40%
Universal Anti-Friction....40%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00....45%
Star....40&10@40&10&5%
May....50&5@50&10%
Barry, $6.00....40&10%

Harness Snaps—
See Snaps.

Hatchets—
List Jan. 1, 1886.
Isaiah Blood....35@40%
Hunt's Shingling, Lath and Claw..40&5%
Hunt's Broad....40%
Buffalo Hammer Co....40&10@50%
Hurd's....40&10@50%
Fayette R. Plumb....40&10@50%
Wm. Mann, Jr., & Co....50@50&5%
Underhill Edge Tool Co....40@50@40&10%
Underhill's, Haines and Bright....33⅓%
C. Hammond & Son....40&10@50%
Simmons'....40&10@50%
Peck's....40&10@40&10&5%
Kelly's....50@50&5%
Sargent & Co....50%
Ten Eyck Edge Tool Co.40&10@40&10&5%
Collins....10%
Schulte, Lohoff & Co....50@50&5%

Hay and Straw Knives—
Lightning, Mfrs'. price ₱ doz $18.00, 25% But jobbers frequently give extras.
Gem....₱ doz $10.00
Wadsworth's....40&7½@40&10%
Carter's Needle....₱ doz $11.50@$12.00
Heath's....₱ doz $13.50@14.00
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw....40%
Nolin's Hay....₱ doz $10.00

Hinges—
Wrought Iron Hinges
Strap and T....75&5@75&10%
Screw Hook and Strap.... 6 to 12 in., ₱ ℔ ..3¼¢; 14 to 20 in., ₱ ℔.. 3¼¢; 22 to 36 in., ₱ ℔....2¾¢
Heavy Welded Hook.... 6 to 12 in., ₱ ℔....3¼¢; 14 to 20 in., ₱ ℔....3¼¢; 22 to 36 in., ₱ ℔....2¾¢
Screw Hook and Eye.... ⅛ in., ₱ doz $1.50; ¼ in., ₱ doz $2.45; ¾ in., ₱ doz $3.80 ... 10%
Rolled Blind Hinges, Nos. 32 and 34 ....50&10%
Rolled Blind Hinges, Nos. 232 and 234 ....55&10%
Rolled Plate....70&10%
Rolled Raised....70&10%
Plate Hinges (8, 10 & 12 in., ₱ ℔.....5¢
"Providence" over 12 in., ₱ ℔....4¾
Spring Hinges—
Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886....20%
Acme....30%
U. S....25&10%
Empire and Crown....20%
Hero and Monarch....55%
American, Gem, and Star....20%
Oxford....20%
Barker's Double Acting....20&10%
Union Mfg. Co....25%
Bommer's....30%
Buckman's....15@20%
Chicago....30%
Wiles'....10%
Devore's....40%
Rex....40%
Royal....60%
Reliable....60%
Champion....60%
Gate Hinges—
Western....₱ doz $4.40, 60%
N. E....₱ doz $7.00, 55%
N. E. Reversible....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3....60&10&5%
N. Y. State....₱ doz $5.00, 55&10%
Automatic....₱ doz $12.50, 50%
Common Sense....₱ doz pair $4.50, 50%
Seymour's....45&10%
Shepard's....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%
Blind Hinges—
Parker....75&2%
Palmer....50&5&10%
Seymour....70&2%
Nicholson....45&10%
Butler....50%
Clark's, Nos. 1, 3, 5, 40 and 50 ....75&10&5@80%
Clark's Mortise Gravity....50%
Sargent's, Nos. 1, 3, 5, 11, 13 ....75&10@55&10&5%
Sargent's, No. 12....77&10&10%
Reading's Gravity....75&10@75&10&5%
Shepard's Noiseless....75&10&5%
Niagara....80&2½%
Buffalo....80&5%
Clark's Genuine Pat....80&5%
O. S., Lull & Porter....75&10@80%
Acme, Lull & Porter....75&5%
Queen City Reversible....75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50....25&2%

Hoes—
Handled—
Garden, Mortar, &c....65%
Planter's, Cotton, &c....65%
Warren Hoe....60%
Magic....₱ doz $4.00
Eye—
D. & H. Scovil....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat....45&5%
Sandusky Tool Co., S. & O. Pat....60%
Hubbard & Co., S. & O. Pat....60%
Chattanooga Tool Co., S. & O. Pat....60%
Grub....60&60&10%

Hog Rings and Ringers—
Hill's Improved Ringers....₱ doz $4.25
Hill's Old Style Ringers....₱ doz $2.75
Hill's Tongs....₱ doz $4.50
Hill's Rings....₱ doz bxs $2.15@2.25
Perfect Rings....₱ doz bxs $1.60@1.70
Perfect Ringers....₱ doz $2.15@$2.25
Blair's Hog Ringers....₱ doz $2.25@2.50
Blair's Hog Rings....₱ doz 90¢@$1.00
Champion Ringers....₱ doz $2.00
Champion Rings, Double....₱ doz $2.25
Brown's Ringers....₱ doz $2.00
Brown's Rings....₱ doz $1.25@1.30

Hoisting Apparatus—
Moore's Hand Hoist, with Lock Brake....20%
Moore's Differential Pulley Block...40%
Energy Mfg. Co's....25%

Holders, File and Tool—
Balz Pat....₱ doz $4.00; 25%
Nicholson File Holders....20%

Hollow-Ware—
Iron—
Stove Hollow-Ware—Ground....60@60&5%
Unground....60&10@60&10&10%
Boilers and Saucepans....40&5%
Tinned Boilers and Saucepans....40%
Gray Enameled-Ware—Stove....45@50%
Maslin Kettles....60&10@60&10&10%
Boilers and Saucepans....40&5%
Agate and Granite Ware, list Jan. 1, 1889....33⅓&10%
Rustless Hollow-Ware....50@50&5%
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Silver Plated—
4 mo. or 5 % cash in 30 days.
Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co.... 40&5%
Rogers & Brother....
Hartford Silver Plate Co....
William Rogers Mfg. Co.... 40&5&5%

Hooks—
Cast Iron—
Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list..... 60&10&10%
Clothes Line, Reading list.....
60&10@60&10&10%
Ceiling, Sargent's list....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list.....
55&10@60&10%
Coat and Hat, Reading..50&10@50&10&10%
Wrought Iron—
Cotton....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.
Wire—
Wire Coat and Hat, Gem, list April, 1886....50%
Wire Coat and Hat, Miles', list April, 1886....50%
Indestructible Coat and Hat....45%
Wire Coat and Hat, Standard....45%
Belt....80@80&10%
Miscellaneous.
Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass....₱ doz $2.25
Bush....55@60%
Whiffletree—Patent....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass....60&10&10%
Fish Hooks, American....50%
Bench Hooks....See Bench Stops.

Horse Nails—

Nos.	6	7	8	9	10
Ausable.....	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%
Clinton, Fin..24¢ 22¢ 21¢ 20¢ 19¢. 40&10@50%
Essex ....28¢ 26¢ 25¢ 24¢ 23¢. 25&10@25&10&10%
Lyra....25¢ 23¢ 22¢ 21¢ 20¢. 40&10&5@50%
Snowden ....25¢ 23¢ 22¢ 21¢ 20¢. 40&10&5@50%
Putnam.....23¢ 21¢ 20¢ 19¢ 18¢. 1000 ℔ in year 15%
Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢..12½&5%
Northwest'n.25¢ 23¢ 22¢ 21¢ 20¢. 10&10&5&5%
Globe .....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
Boston.....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
A. C.....25¢ 23¢ 22¢ 21¢ 20¢. 25&10@33⅓&5%
C. B.-K.....25¢ 23¢ 22¢ 21¢ 20¢. 25&10@33⅓&5%
Champlain .28¢ 6¢ 25¢ 24¢ 23¢. 25&10&10%
New Haven..28¢ 26¢ 25¢ 24¢ 23¢. 25&10@25&10&10%
Saranac.....23¢ 21¢ 20¢ 19¢ 18¢..30&10%
Champion ...25¢ 23¢ 22¢ 21¢ 20¢. 10&10&10%
Capewell.....28¢ 26¢ 25¢ 24¢ 23¢. 35&5@35&10%
Star.....23¢ 21¢ 20¢ 19¢ 18¢. 10&10@10&12½%
Anchor.....23¢ 21¢ 20¢ 19¢ 18¢.....35%
Western.....23¢ 21¢ 20¢ 19¢ 18¢..40&10%
Empire Bronzed.....14 ₱ ℔.

Horse Shoes—See Shoes Horse.

Hose, Rubber—
Competition....75&10@75&10&5%
Standard....70&70&10%
Extra....6C@60&10%
N. Y. B. & P. Co., Para....30&10%
N. Y. B. & P. Co., Extra....50%
N. Y. B. & P. Co., Dundee....60&10&5%

Huskers—
Blair's Adjustable....₱ gr $8.00
Blair's Adjustable Clipper....₱ gr 7.00

Indurated Fiber-Ware—25%.
Spittoons, No. 2, ₱ doz....$9.00
Basins, Ringed, ₱ doz., No. 1, $4.80; No. 2, $4.20; No. 3....$3.60
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest....$3.70
Butter Bowls 15, 17 and 19-Inch (3 pieces), ₱ nest....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set....$4.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₱ set....$3 00
See also *Pails.*

Jack Screws—See Screws.

Kettles—

	Spun.	Stamped.
Brass, 7 to 17 in., ₱ ℔....	24¢	21 ¢
Brass larger than 17 in., ₱ ℔....	26¢	23½¢

Enameled and Tea Kettles. See *Hollow-Ware.*

Keys—
Lock Asso'n list Dec. 30, 1886...50&10@60&5%
Eagle, Cabinet, &c....33⅓&2%
Hotchkiss' Brass Blanks....40%
Hotchkiss, Copper and Tinned....40%
Hotchkiss' Pad. and Cab....35%
Ratchet Bed Keys....₱ doz $4.00, 15%
Wollensak Tinned....50&10%

Knife Sharpeners—
Parkin's.
Applewood Handles...₱ doz $6.00, 40%
Rosewood or Cocobolo. ₱ doz $9.00, 40%

Knives—
Wilson's Butcher Knives....25@30%
Ames' Butcher Knives....25%
Foster Bros.' Butcher, &c....40%
Nichols' Butcher Knives....40&10%
Ames' Shoe Knives....20@25%
Ames' Bread Knives. ₱ doz $1.50, 15@20%
Moran's Shoe and Bread....20%
Hay and Straw....See Hay Knives.
Table and Pocket....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent....$3.50

Knobs—
Door Mineral....65@68%
Door Por. Jap'd....75@78%
Door For. Nickel....$2.00@2.25
Door Por. Plated, Nickel....$2.00@2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain....75¢ gro inch, 10%
Furniture, Wood Screws....25&10%
Base, Rubber Tip....70&10&5%
Picture, Judd's....60&10&10@70%
Picture, Sargent's....70&10%
Picture, Hemacite....35&5%
Shutter, Porcelain....65&10%
Carriage, Jap....₱ gro 80¢, 60&10%

Ladles.—
Melting, Sargent's....55&10%
Melting, Reading....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W....35&10@40%
Melting, Warner's....30%

Lawn Mowers—
Standard List....50&10%
Quaker City....60&10%
Enterprise....60&10%

Lanterns—
Tubular—
Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₱ doz less.
Miscellaneous.
Police, Small, $6.00; Medium, $7.25; Large, $9.75....20@25%

Lemon Squeezers—
Porcelain Lined, No. 1....₱ doz $6.00, 25@30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Dunlap's Improved ....₱ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90
Little Giant....50@50&5%
King....40&5%

Lines—
Cotton and Linen Fish, Draper's....50%
Draper's Chalk....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25....25%
Cotton Chalk....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton....45%
Wire Clothes.. Nos. 18 19 20
$3.60 $3.00 $2.5
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—
Door Locks, Latches, &c.
List Dec. 30, '86, chgd Feb. 2, '87.... 50&10@60&10%
R. & E. Mfg.Co.,list Mar.20, 1889...60&10%
Mallory, Wheeler & Co., list July, '88 50&10@60@10%
Sargent & Co., list Aug. 1, '88..55&2& 10@60&10&5%
Reading Hardware Co., list Feb. 2, '88. 55@60&10%
Note.—Lower net prices often made.
Perkins' Burglar Proof....60@25%
Plate....33⅓&2%
F. Many's "Extension Cylinder" $10.50 ₱ doz.
Barnes Mfg. Co....40@40&10%
Yale....net prices
Deitz Flat Key....30%
L. & C. Round Key Latches....30&10%
L. & C. Flat Key Latches....33⅓&10%
Romer's Night Latches....15%
Shepardson or U. S....35%
Felter or American....40&10%
Seed's N. Y. Hasp Lock....25%
Cabinet—
Eagle, Gaylord Parker and Corbin... List March, '84, rev Jan.1,'85..33⅓&2%
Deitz, Nos. 36 to 39....40%
Deitz, Nos. 51 to 63....40&10%
Deitz, Nos. 86 to 96....30%
Stoddard Lock Co....30&33⅓&
"Champion" Night Latches....40%
Barnes Mfg. Co....40@40&10%
Eagle and Corbin Trunk....25&2%
"Champion" Cab. and Combin...33⅓&
Yale....net prices
Romer's....25%
Padlocks—
List Dec. 23, '84....75@75&10%
Yale Lock Mfg. Co.'s....net prices
Eagle....25&2%
Eureka, Eagle Lock Co....40&2%
Romer's, Nos. 0 to 91....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz....40%
Champon Padlocks....40%
Hotchkiss....30%
Star....45%
Horseshoe....₱ doz, $9. 40@40&10%
Barnes Mfg. Co....40@40&10%
Nock's....30%
Brown's Pat....25%
Scandinavian....90@90&10%
Fraim's Pat. Scandavian low list....60%
Ames Sword Co. up to No. 150....40%
Ames Sword Co. above No. 150....50%

Lumber Tools.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall, Iron Socket Peavies....₱ doz $19.00
Cant Hooks, "Blue Line"..₱ doz $16.00
Cant Hooks, Common Finish..₱doz$14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks....₱ doz $18.00

Lustro—
Four-ounce Bottles....₱ doz, $1.75; ₱ gross....$17.00

Mallets—
Hickory....20&10@20&10&10%
Lignumvitæ....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Match Safes—
Dangerfield's Self-Igniting...₱ doz $1.50

Mattocks. Regular list....50&10&5@60%

Meat Cutters—
Dixon's ₱ doz....40&5%

Nos.....	1	2	3
	$14.00	$17.00	$0.00.

Woodruff's ₱ doz....40&5%

Nos...		100	150
		$15.00	$18.00

Champion ₱ doz....40&45%

Nos.....	200	300	400
	$22.00	$27.00	$40.00

Hales Pattern ₱ doz....70@70&5%

Nos.....		12	13
	$27.00	$33.00	$45.00

American....30%

Nos.....	1	2	3	4	B	5
Each.....	$5	$7	$10	$25	$50	$60

Enterprise....30%

Nos.....	10	12	22	32	42
Each.....	$3	$2.50	$4	$6	$15.

Pennsylvania....40&10%

Nos.....	1	2	3	00
₱ doz...	$24.00	$28.00	$36.00	$28.00.

Miles' Challenge ₱ doz....45@45&10%

Nos.....	1	2	3
	$22.00	$30.00	$40.00

Home No. 1....₱ doz, $26.00, 55&10%
Draw Cut, each:

Nos..5	2	6	8	
$50	$75	$80	$225	.....20@25%

Beef Shavers (Enterprise).....20&10@30%
Chadborn's Smoked Beef Cutter. ₱ doz $66.00

Mincing Knives—
Am. (2d quality, ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18....net
Lothrop's....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles....50&10@60%
Buffalo Adjustable, ...₱ doz. $3.00. 25%

Molasses Gates—
Stebbin's Pat. ..... 70@70&7½%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Chase's Hard Metal ..... 50&10%
Bush's 20%
Lincoln's Pattern ..... 70@70&10
Weed's ..... 20&10%

Boss, ₱ doz:
Nos. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Money Drawers....₱ doz, $18@$20

Muzzles—
Safety ..... ₱ doz, $3.00, 25 %

Nails, see Trade Report.
Wire Nails, Papered.
See Trade Report.
Tack Mfrs.' list ..... 70&10%
Wire Nails, Standard Penny.
Card June 1, '89, base ..... $2.40@$2.50

Nail Puller—
Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $30.00, 10%
Pelican ..... ₱ doz, $9.00, 25%
Boss ..... ₱ doz, $30.00, 30%
Lightning ..... ₱ doz $21.00

Nail Sets—
Square ..... ₱ gr., $4.00@$4.25
Round ..... ₱ gr. $3.25
Cannon's Diamond Point..₱ gr.,$12, 20%

Nut Crackers—
Table (H. & B. Mfg. Co.) 40%
Blake's Pattern ..... ₱ doz $2.00, 10%
Turner & Seymour Mfg. Co. 50%

Nuts—

Nuts, off list Jan. 1, 1888:	Square.	Hex.
Hot Pressed	5.4¢	5.9¢
Cold Punched	5.4¢	5.5¢

In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—
Government ..... ₱ ℔ 7¾ @8 ¢
U. S. Navy ..... ₱ ℔ 6¾ @ 7¢
Navy ..... ₱ ℔ 5¾¢@6¾¢

Oilers—
Zinc and Tin ..... 65@65&10%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&10%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%

Packing, Steam—
Rubber—
Standard ..... 60&10@60&10&10%
Extra ..... 50&10@60%
N. Y. B. & P. Co., Standard ..... 50&10&5%
N. Y. B. & P. Co., Empire 70%
N. Y. B. & P. Co., Salamander, ₱ ℔ 65¢, 30%
Jenkins' Standard ..... ₱ ℔ 80¢, 35%

Miscellaneous—
American Packing ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute ..... 7¢@8¢ ₱ ℔

Padlocks—
See Locks.

Pails—
Galvanized Iron—

Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75
Whiting's	2.75	3.00	3.25
Sidney Shepherd & Co.	2.80	3.00	3.40
Iron Clad	2.75	3.00	3.25
Fire Buckets	2.75	3.25	3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₱ doz $6.00
Fire, Stable and Milk, 14 qt ..₱ doz $7.80

Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	5.00	
Fire Pails, No. 2, 14 qt. per doz	4.50	

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' ..... 40&10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 50&10&5 @ 60%

Picture Nails—
Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list .50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent 40%

Pinking Irons— ₱ doz 65¢ net

Pipe, Wrought Iron—
List March 23, 1887.
1¼ and under, Plain 52½%
1¼ and under, Galvanized 45%
1½ and over, Plain 65%
1½ and over, Galvanized 52½%
Boiler Tubes, Iron.
1¾ and under 55%
2 in. and larger 60%

Planes and Plane Irons—
Wood Planes—
Molding ..... 50&5&50&10%
Bench, First Quality ..... 60@60&5%
Bench, Second Quality .60&10@60&10&10%
Bailey's (Stanley R. & L. Co.) ..... 40&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.) ..... 40@10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20@10%
Victor Planes (Stanley R. & L. Co.) .20@10%
Steer's Iron Planes ..... 35@35&5%
Meriden Mal. Iron Co.'s .30&10@30&10&10%
Davis's Iron Planes ...30&10@30&10&10%
Birmingham Plane Co. ..... 50@50&5%
Gage Tool Co.'s Self-Setting ..... 20&10%
Chaplin's Iron Planes ..... 40@40&5%
Sargent's ..... 30&10@30&10&10%

Plane Irons—
Plane Irons ..... 20&10%
Plane Irons, Butcher's ..$5.00@$5.25 to £
Plane Irons, Buck Bros. 30%
Plane Irons, Auburn Tool Co., "Thistle" 40%
Sandusky Tool Co.:
Single and Cut 30%
Double 40%
L. & I. J. White 25%

Pliers and Nippers—
Button's Patent ..... 30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@33⅓%
Humason & Beckley Mfg. Co. .50@50&10%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40%@40&5%

Plumbs and Levels—
Regular List ..... 70&10@70&10&10%
Disston's ..... 5&10%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Polish, Metal.
Prestoline ..... 20&10%
Krestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Pokes, Animal—
Bishop's I. X. L. ..... ₱ doz $6.50
Bishop's O. K. ..... ₱ doz $5.50
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $3.00

Poppers, Corn—
Round or Square, 1 qt..₱ gr $12.00@15.00
Round or Square, 2 qt..₱ gr $25.00@26.00

Post Hole and Tree Augers and Diggers—
Samson Post Hole Digger, ₱ doz $36.00. 25&10%
Fletcher Post Hole Augers, ₱ doz $36, 20%
Eureka Diggers ..... ₱ doz $16.00@17.00
Leed's ..... ₱ doz $8.00@9.00
Vaughan's Post Hole Auger, ₱ doz $13.00@14.00
Kohler's Little Giant ..... ₱ doz $18.00
Kohler's Hercules ..... ₱ doz $15.00
Kohler's New Champion ..... ₱ doz $9.00
Schneidler ..... ₱ doz $18.00
Ryan's Post Hole Diggers ..₱ doz $24.00
Cronk's Post Bars, ₱ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₱ doz $30.00, 50%
Imperial, ₱ doz, $15 ..... 45%

Potato Parers—
White Mountain ..... ₱ doz $5.00@5.50
Antrim Combination ..... ₱ doz $8.00
Hoosier ..... ₱ doz $13.50

Pruning Hooks and Shears—
Disston's Combined Pruning Hook and Saw ..... ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@4.50 net
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, 7.25

Pulleys—
Hot House, Awning, &c. ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 66⅔&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 ..... 40%

Pumps—
Cistern, Best Makers ..... 50&10@60%
Pitcher Spout, Best Makers ..60&10@60&10&10%
Pitcher Spout, Cheaper Goods...70&5@70&10&5%

Punches—
Saddlers' or Drive, good, ₱ doz...60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co.'s Springfield Socket.50&5%
Spring, good quality ..... ₱ doz $2.50@2.60
Spring, Leach's Pat. 15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners' ..... ₱ doz $1.44, 55%
Tinners' Hollow Punches ..... 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₱ ft 35¢ 15%
Sliding Door, Bronzed Wr't Iron.. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light, In. ⅝ ¾ ⅞
Per 100 feet $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet ..$2.15 2.70 3.25, net
Terry's Wrought Iron, ₱ foot ..... 4½@5¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier Steel Rail, ₱ foot ..... 4½¢
Moore's Wrought Iron 25%

Rakes—
Cast Steel, Association goods 65%
Cast Steel, outside goods ..... 60&10&70%
Malleable ..... 70&70&5%
Gibbs Lawn Rake ..... $12.00, 50&15%
Canton Lawn Rake ..... $9.00, 50&10%
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%

Razor Strops—
Genuine Emerson ..... 60@60&5%
Imitation " ..... ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ..... ₱ doz $2.00
Lamont Combination ..... ₱ doz $4.00

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 50%
Copper ..... 50&10@60%

Rivet Sets ..... 50&10%

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut ..... ₱ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%

Rope—
Manufacturers' prices for large lots:
Manila...½ in. and larger ₱ ℔ 15 ¢
Manila ..... ⅜ in. ₱ ℔ 15½¢
Manila ..... ¼ and 5-16 in. ₱ ℔ 15¾¢
Manila Tarred Rope ..... ₱ ℔ 14½¢
Manila, Hay Rope ..... ₱ ℔ 15 ¢
Sisal...½ inch and larger ₱ ℔ 12¼¢
Sisal ..... ⅜ in. ₱ ℔ 12¾¢
Sisal ..... ¼ and 5-16 in. ₱ ℔ 13¼¢
Sisal, Hay Rope ..... ₱ ℔ 12¼¢
Sisal, Tarred Rope ..... ₱ ℔ 11¾¢
Sisal, Medium Lathe Yarn, ₱ ℔ 11¼¢
Cotton Rope ..... ₱ ℔ 15@18¢ net
Jute Rope ..... ₱ ℔ 8¢
1½% for cash in 10 days.

Rules—
Boxwood ..... .80&10&10@80&10&10&5%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... .25&10%

Sad Irons—
From 4 to 10, at factory ...₱ 100 ℔, $2.40@$2.55
Self-Heating ..... ₱ doz $9.00 net
Self-Heating, Tailors' ..₱ doz $18.00 net
Gleason's Shield and Toilet 25%
Mrs. Pott's Irons ..... 40@40&10%
Enterprise Star Irons 40%
Combined Fluter and Sad Iron, ₱ doz, $15.00 ..... 15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8¼¢, 15%
New England ..... 8¢, 15%
Mahony's Troy Pol. Irons 25%
Sensible ..... 20@20&5%
National Self-Heating ..... 30 %

Sand and Emery Paper and Cloth—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Sash Cord—
Common ..... ₱ ℔, 10@11¢
Patent, good quality ..... ₱ ℔ 13@13½¢
White Cotton Braided, fair..₱ ℔ 28@29¢
Common Russia Sash ..... ₱ ℔ 13½¢
Patent " " ..... ₱ ℔ 15¢
Cable Laid Italian Sash ..... ₱ ℔ 22¢@23¢
India Cable Laid " ..... ₱ ℔ 13¢

Silver Lake—
A Quality, White, 50¢ ..... 10&10&5%
A Quality, Drab, 55¢ ..... 10&10&5%
B Quality, White, 50¢ ..... 20&10&5%
B Quality, Drab, 55¢ ..... 20&10&5%
C Quality, White (only) ..... 26½¢@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White ..... 30¢
Egyptian, India Hemp, Braided ..... 25¢

Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢ ..... 30@30&5%

Sash Locks—
Clark's, No. 1, $10; No. 2, $8 ₱ gr.. .33⅓%
Ferguson's 33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor ..... 60&10&2%
Walker's 10%
Attwell Mfg. Co. ..... 25&33⅓%
Reading ..... 66⅔&10@66⅔&10&10%
Hammond's Window Springs 40%
Common Sense, Jap'd, Cop'd and Br'zed ..... ₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal 30%
Kempshall's Gravity 30%
Kempshall's Model ..... 60@60&10%
Corbin's Daisy, list Feb. 15, 1886 ..... 70%
Payson's Perfect ..... 60@60&10%
Hugunin's Sash Balances ..... 25&5&2%
Hugunin's New Sash Locks ..... 25&5&2%
Stoddard "Practical" 10%
Ives' Patent ..... 60@60&10%
Lische's, Nos. 100 and 110, ₱ gr $8; 105, $10.00 ..... 20&10%
Davis, Bronze, Barnes Mfg. Co. 50%
Champion Safety, list March 1, 1888 ..... 55@55&5%
Security 70%
Buckeye ..... ₱ gro $4.80

Sash Weights—
Solid Eyes ..... ₱ ton $22.00

Sausage Stuffers or Fillers—
Milas' "Challenge," ₱ doz $20, 50@50&5%
Perry ..... ₱ doz, No. 1, $15.00; No. 0, $21.00 ..... 50@50&5%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co. ..... 20&10@30%
Silver's ..... 40&10%

Saws—
Disston's Circular ..... 45@45&5% } Extras sometimes given by jobbers.
Disston's Cross Cuts ..... 45@45&5%
Disston's Hand 25@25&5%
Atkins' Circular Shingle and Heading 50&10%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ..... ₱ foot 24@25¢
Atkins' Hollow Back X Cuts. ₱ foot 18¢
Atkins' Mulay, Mill and Drag..... 40&10%
Atkins' One-Man Saw, with handles, ₱ foot 32¢
W. M. & C., Hand ..... 30&5@30&10%
W. M. & C., Champion X Cuts, Regular ..... ₱ foot 24@26¢
W. M. & C. X Cuts, Thin Back, ₱ foot 27¢@29¢
Peace Circular and Mill ..... 45&10%
Peace Hand Panel and Rip 20&10@20&10&10%
Peace Cross Cuts, Standard ..₱ foot 25¢
Peace Cross Cuts, Thin Back ₱ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 39¢; No. 2, 27¢; No. 3, 24¢

Hack Saws—
Griffin's, complete ..... 40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades 25%
Diamond Hack Saws and Blades..... 25%
Eureka and Crescent 25%

Saw Frames—
White Vermont ..... ₱ gro $9.00@10.00
Red, Polished and Varnished..... ₱ doz $1.50, 25%

Saw Sets—
Stillman's Genuine...₱ doz $5.00@7.75, 40&5%
Stillman's Imita. ..... ₱ doz $3.25@5.25, 40&5%@40&10%
Common Lever ..... ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's...No. 0, $8.00; No. 1, $15, 15@20%
Nash's ..... 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $18.00, 50&10%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star, $9, No. 15, $5.50; 20& 10@20&10@10%
Atkin's Lever, ₱ doz No. 1, $6.00; No. 2, $9.60
Atkin's Criterion ..... ₱ doz $7.50
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Am. Tool Co.'s Superior ..... ₱ doz $15,50%

Saw Tools—
Atkins' Perfection ..... ₱ doz $15.00
Atkins' Excelsior ..... ₱ doz $6.00
Atkins' Giant ..... ₱ doz $4.00

Scales
Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161....₱ doz $6.75@$7.00
Union Platform, Plain ..... $2.10&2.20
Union Platform, Striped ..... $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—
Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1 ..... 40%
Chatillon's No. 2 ..... 50%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.50 ..... 30&10%
Box, 1 Handle ..... ₱ doz $4.00, 10%
Box, 2 Handle ..... ₱ doz $6.00, 10%
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10@60%
Ship, Common ..... ₱ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons....33⅓@33⅓&10%
Stearns' Frames and Corners.25@25&10%

Screw Drivers—
Douglas Mfg. Co. ..... 20&10&10%
Disston's ..... 45&10%
Disston's Pat. Excelsior ..... 45&10%
Buck Bros. 30%
Stanley R. & L. Co.'s Varnished Handles ..... 65&10% Black Handles. ..... 60&10%
Sargent & Co.'s No. 1 Forged Blade ..... 60&10&10%
Nos. 20, 30 and 60 ..... 66⅔&10&10%
Knapp & Cowles' No. 1 ..... 60&20&70%
No. 1 Extra ..... 60@60&10%
Nos. 00 & 4 ..... 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat. ..... 30@33⅓%
Crawford's Adjustable 30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense ₱ doz $6.00, 25&10%
Syracuse Screw-Driver Bits....30&30&5%
Screw Driver Bits ..... ₱ doz 50@75¢
Screw-Driver Bits, Parr's ..... ₱ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel 50%

Screws—
Wood Screws—List March 1, 1889
Flat Head Iron ..... 50% } Extra 5 @ 10 % often given
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze. 35%

Machine—
Flat Head, Iron.....55%
Round Head, Iron.....50%
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Lag, Blunt Point.....75@75&10%
Coach and Lag, Gimlet Point.....75%
Bed.....25&5%
Hand Rail, Sargent's.....66⅔&10%
Hand Rail, H. & B. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Scroll Saws—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cabinet Makers', $15.....25%
Barnes' Scroll Saw Blades.....35%

Scythe Snaths.....50&2%

Shears—
American (Cast) Iron...75&10@75&10&5%
Pruning...See Pruing Hooks and Shears.
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
First quality C. S. Trimmers..80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%
Sliding Shutter—
R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Ship Tools—
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%

Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phœnix, at factory. $4.00
Mule—
Add $1 ₩ keg to above prices.
Ox, Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—
(*Eastern prices 2¢ off, cash, 5 days.*
Drop, ₩ bag, 25 ℔.....$1.25
Drop, ₩ bag, 5 ℔.....30
Buck and Chilled, ₩ 25-℔ bag.....1.50
Buck and Chilled, ₩ 5-℔ bag.....35

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
Old Colony (Sanford Fork & Tool Co).20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
Payne Pettebone & Son, list January, 1886.....30%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel, list Nov. 1, 1887.20%
Coldbrookdale Iron Co.....50&10%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Sieves—
Buffalo Metallic, S. S. & Co...50&25&10%
Shaker (Barler's Pat.) Flour Sifters.... ₩ doz $2.00; ₩ gr $21.00
Electric.....₩ gr $18.00
Hunter's.....₩ gr $21.00
Smith's Adjustable Sifters....₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25
Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	70¢	90¢
Mesh 20, Nested, ₩ doz..	85¢	$1.00
Mesh 24, Nested, ₩ doz..	$1.00	1.10

Slates—
School, by case.....40%

Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&2%
Covert, New Patent.....50&5&2%
Covert, New R. E.....60&2%
Covered Spring.....60&10&10%

Soldering Irons—
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Spoke Shaves—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.)...40&10%
Stearns'.....20&10%

Spoke Trimmers—
Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%

Spoons and Forks—
Tinned Iron—
Basting, Cen. Stamp. Co.'s list. ..70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%
Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers.....50%
C. Rogers & Bros.....50%
Rogers & Bro.....50%
Reed & Barton.....50%
Wm. Rogers Mfg. Co.....50&10@60%
Simpson, Hall, Miller & Co.....50&10
Holmes & Edwards Silver Co.50&10@60%
L. Boardman & Son.....50&10%
Miscellaneous.
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10%
No. 30 Silver Metal.....50&10%
No. 24 German Silver.....50&10
No. 50 Nickel Silver.....50%
No. 49 Nickel Silver.....50&10
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60%
Boardman's Nickel Silver.....50 } 4 mos.
Boardman's Britannia Spoons, case lots.....60 }

Springs—
Elliptic, Concord, Platform and Half Scroll.....60@60&5%
Cliff's Bolster Springs.....25%

Squares—
Steel and Iron, Nickel-Plated } 75&10@80%
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels.45&10%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Standard Fibre Ware—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.00
Cuspidors.....		8.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.

Staples—
Fence Staples, Galvanized, Fence Staples, Plain } Same price as B'rb Wire. See Trd. Rep.

Steelyards.....40&10@50%

Stocks and Dies—
Blacksmith's
Waterford Goods.....30&5@30&10%
Butterfield's Goods.....30&5@30&10%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates....33⅓&5@40%
Reversible Ratchet.....30%

Stone—
Hindostan No. 1, 3¢; Axe, 3¾¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 19@20¢
Washita Stone, No. 1.....₩ ℔ 14@15¢
Washita Stone, No. 2.....₩ ℔ 10@11¢
Washita Slips, No. 1, Extra..₩ ℔ 30@38¢
Washita Slips, No. 1.....₩ ℔ 24@25¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1.50
Lake Superior, Chase.....₩ ℔ 16¢
Lake Superior Slips, Chase...₩ ℔ 31@32¢
Seneca Stone, Red Paper Brand....₩ ℔ 18@20¢
Seneca Stone, High Rounds..₩ ℔ 20@25¢
Seneca Stone, Small Whets..₩ gro $24.00

Stove Polish—
Joseph Dixon's.....₩ gro $6.00,10%
Gem.....₩ gro $4.50, 10%
Gold Medal.....₩ gro $6.00, 25%
Mirror.....₩ pro $6.00, —%
Lustro.....₩ gro $4.75
Ruby.....₩ gro $3.75
Rising Sun, 5 gro lots.....₩ gro $5.50
Dixon's Plumbago.....₩ ℔ $5.00
Boynton's Noon Day, ₩ gro.....13.00
Parlor Pride Stove Enamel..₩ gro 8 cans
Yates' Liquid, 2 3 5 10 gal....8¢
₩ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans. ₩ ℔ 15¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish.₩ gro $9.00
Bonnell's Paste Stove Polish..₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00

Tacks, Brads, &c.—

List, Jan. 2, 1888.—[*Note.*—Some manufacturers are selling Tacks at slightly higher prices than those named]:
American Iron Carpet.....80@80&5%
Steel Carpet.....80@80&5%
Swedes Iron Carpet.....80@80&5%
American Iron Cut.....75@75&10%
Swedes Iron.....75&5@75&10%
Swedes Iron, Upholsterers', 75&10@80%
Tinned Swedes Iron.....75&10@80%
Tinned Swedes Iron, Upholsterers', 75&10@80%
Gimp and Lace.....75&10@80%
Tinned Gimp and Lace.....75&10@80%
Swedes Iron Trimmers'.75&10@75&10&5%
Swedes Iron Miners' ...75&10@75&10&5%
Swedes Iron Bill Posters' or Railroad, 75&10@75&10&5%
Swedes Steel (Swedes Iron price list), 80@80&5%
Copper Tacks.....50&10%
Copper Finishing, Trunk and Clout Nails.....50&10%
Finishing Nails.....70&10@70&10&5%
Trunk and Clout Nails..70&10@70&10&5%
Tinned Trunk and Clout Nails, 70&10@ 70&10&5%
Basket Nails.....70&10@70&10&5%
Common and Patent Brads, 70&10@70& 10&5%
Hungarian Nails.....70&10@70&10&5%
Chair Nails.....70&10@70&10&5%
Zinc Glaziers' Points.....50@50&5%
Cigar Box Nails.....50&10@50&10&5%
Picture-Frame Points...50&10@50&10&5%
Looking-Glass Tacks...50&10@50&10&5%
Leathered Carpet.....50&10@50&10&5%
Brush Tacks.....50&10@50&10&5%
Shoe Finders,' List Jan. 2, 1888, 10&10@ 10&10&5%
Lining and Saddle Nails, List Jan. 1, 1886:
Silvered.....30&10&10%
Japanned.....20&10&10%
Double-Pointed Tacks.....85%
Wire Carpet Nails.....50&10%
Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tap Borers—
Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

Tapes, Measuring—
American.....25&10%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—
Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel
Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—
Shears and Snips (P. S. & W.).....20@25%
Punches, see Punches.
Snips, J. Mallinson & Co.....33⅓%

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....75@75&5

Tire Benders, Upsetters, &c—
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Tobacco Cutters—
Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s ₩ doz, $18.00 50@55%
Wilson's.....55%
Sargent's.....₩ doz, $24, 55&10%
Acme.....₩ doz, $20.00,40%

Transom Lifters—
Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Jan. 1, 1887.
Bronzed Iron Rods.....50&10&2
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

Traps—
Game—
Newhouse.....35@40&5%
Oneida Pattern.....70@70&5%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood,Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50, 15%
Mouse, Bonanza.....₩ gr $10.00
Mouse Delusion.....₩ gr $15.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $6.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz 90¢
In full cases.....₩ doz 75¢

Trowels—
Lothrop's Brick and Plastering.25@25&5%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Triers—
Butter and cheese.....25%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ½ ℔ Balls.....	22¢	30¢
No. 12, ¼ and ½ ℔ Balls.....	21¢	29¢
No. 18, ¼ and ½ ℔ Balls.....	18¢	28¢
No. 24, ¼ and ½ ℔ Balls.....	18¢	28¢
No. 36, ¼ and ½ ℔ Balls.....	16¢	27¢

No. 264, Mattrass, ¼ and ½ ℔ Balls.48&50¢
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ½ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine).....11½¢
3-Ply Hemp, 1 ℔ Balls.....12¢@12¼¢
3-Ply Hemp, 1½ ℔ Balls.....11¢@11¼¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@10¢
2, 3, 4 and 5-Ply Jute, ½ ℔ Balls.....10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....60@60&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%

Wagon Boxes—

Per ℔.....2½¢

Wagon Jacks—
Daisy.....25%

Washer Cutters—
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's,₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bouney's.....30&10%

Washers—

Size.....	⅛	5-16	⅜	½	⅝	¾	1
Washers....	6½	5½	4½	3½	3	3	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

Well Buckets, Galvanized—
Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₩ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₩ doz $4.00@4.25

Well Wheels—
8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire—
Iron—
Market,
Br. & Ann., Nos. 0 to 18....70&10@75%
Cop'd, Nos. 0 to 18.....70@70&5%
Galv., Nos. 0 to 18.....25&5%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone,
Br. and Ann'd, Nos. 16 to 18, 72½@ 72½&5%
Bright and Ann'd, Nos. 19 to 26, 75@ 75&5%
Br. and Ann'd, Nos. 27 to 36, 75@10&5%
Tinned.....70@70&10%
Tinned Broom Wire.....70&5@70&10%
Galvanized Fence.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grape, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....15&20%
Copper, list Jan. 18. 1884.....30@35%
Barb Fence.....See Trade Report
Wire on Spools.....65%
Malin's Steel and Tin'd Wire on Spools, 40%
Malin's Brass and Cop. Wire on Spools 30%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₩ ℔
Picture Wire.....New list, 50%
Barb Wire Safety Guards, ₩ 1000, $9.00, 25%
Wire Clothes Lines, see Lines.

Wire Cloth, Netting, &c.—
Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.80 @ $1.90
Galvanized Wire Netting....75@75&5%

Wire Goods—
See Bright Wire Goods.

Wire Rope—
List May 1, 1886.
Iron.....30%
Cast Steel.....40%

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....55&3%
Coes' "Mechanics".....55&10&3%
Girard Standard.....70&10%
Machinists', Sterling Wrench Co..70&10%
Lamson & Sessions' Engineers'...60&10%
Lamson & Sessions' Standard.....70&10%
Goes' Pattern, Wrought..... Girard Agricultural..... Lamson & Sessions' Agric'l.. Sterling Wrought..... } 75&10&5%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%

Wringers, Clothes—
List March 11, 1889, 2% cash.

Wrought Goods—
Staples, Hooks, &c, list Jan. 12, 1886, 80&20@80&25%

CURRENT METAL PRICES.

JULY 17, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron :	
¾ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in.....	₩ lb 1.90 @ .. ¢
Refined Iron :	
¾ to 2 in. round and square.. 1 to 4 in. x ⅝ to 1½ in..... 4½ to 6 in. x ⅝ to 1 in.....	₩ lb 2.00 @ 2.10¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.30¢
Rods—⅜ and 11-16 round and sq..	₩ lb 2.10 @ 2.20¢
Bands—1 to 6 x 3-16 to No. 12.....	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price..	₩ lb 3.00 @ ... ¢
Burden's "H. B. & S." Iron, base price.....	₩ lb 2 80 @ ...¢
"Ulster".....	₩ lb 3.00 @ ...¢
Norway Rods	4.00 @ 5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2½¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.		R. G.	Cleaned.
10 to 16.....	₩ lb 2.75	@ 2.80¢	3.25	@ .....¢
17 to 20.....	₩ lb 2.85	@ 3.00¢	3.25	@ 3.50 ¢
21 to 24.....	₩ lb 3.00	@ 3.10¢	3.50	@ .....¢
25 and 26....	₩ lb 3.20	@	3.50	@ .....¢
27.....	₩ lb 3.35	@ 3.37½¢	3.75	@ .....¢
28.....	₩ lb 3.50	@ ....¢	4.00	@ .....¢

	B. B.	2d qual.
Galv'd, 14 to 20, ₩ lb, 4.50	@	4.38 @ .....¢
Galv'd, 21 to 24, ₩ lb, 4.87½	@	4.75 @ .....¢
Galv'd, 25 to 26, ₩ lb, 5 25	@	5.12 @ .....¢
Galv'd, 27.....	₩ lb, 5.62½	@ ..... 5.48 @ .....¢
Galv'd, 28.....	₩ lb, 6.00	@ ..... 5.85 @ ....¢
Patent Planished.....	₩ lb A 10¢	B, 9¢
Russia.....	₩ lb 9½¢ @ 10¢	
American Cold Rolled B. B.....	₩ lb 5¢ @ 7¢	
Craig Polished Sheet Steel.....	₩ lb, 8¢	

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	22 ¢
Straits, Pigs.....	21½¢
English, Pigs.....	22 ¢
Straits in Bars...	23 ¢

Tin Plates.

		Charcoal Plates.—Bright.		Per box.
Melyn Grade.....	IC, 10 x 14..	$5.75	@	$6 00
" "	IC. 12 x 12..	6.00	@	6.25
" "	IC, 14 x 20..	5.75	@	6.00
" "	IC, 20 x 28..	12.00	@	12.50
" "	IX, 10 x 14..	7.25	@	7.50
" "	IX, 12 x 12..	7.50	@	7.75
" "	IX, 14 x 20..	7.25	@	7.50
" "	IX, 20 x 28..	15.00	@	15 50
" "	DC, 12½ x 17..	5 50	@	5.75
" "	DX, 12½ x 17..	7.00	@	7.25
Call and Grade.....	IC, 10 x 14..	5.75	@	6.00
" "	IC, 12 x 12..	6.00	@	6.25
" "	IC, 14 x 20..	5.75	@	6.00
" "	IX, 10 x 14..	7.25	@	7.50
" "	IX, 12 x 12..	7.50	@	7.75
" "	IX 14 x 20.	7.25	@	7.50
Allaway Grade.....	IC, 10 x 14..	5.00	@	5.12½
" "	IC, 12 x 12..	5.12½	@	5.25
" "	IC, 14 x 20..	5.00	@	5.12½
" "	IC, 20 x 28..	11.00	@	....
" "	IX. 10 x 14..	6.00	@	....
" "	IX, 12 x 12..	6.25	@	....
" "	IX, 14 x 20..	6.00	@	....
" "	IX, 20 x 28..	12.00	@	....
" "	DC, 12½ x 17..	4 75	@	5.00
" "	DX, 12½ x 17..	5.75	@	6.00

		Coke Plates.—Bright.		
Steel Coke.—	IC, 10 x 14, 14 x 20..	$4.75	@	$5.00
	10 x 20..	7.25	@	7.50
	20 x 28..	9.75	@	10.25
	IX, 10 x 14, 14 x 20..	5.50	@	5.75
BV Grade.—	IC, 10 x 14, 14 x 20..	4.40	@	4.60

		Charcoal Plates.—Terne.		
Dean Grade.—	IC, 14 x 20..	$4.35	@	$4.62½
	20 x 28.....	8.75	@	9.25
	IX, 14 x 20.....	5.40	@	5.62½
	20 x 28.....	11.00	@	11.87½
Abecarne Grade.—	IC, 14 x 20....	4.25	@	4.50
	20 x 28....	8.45	@	9.00
	IX, 14 x 20 ...	5.25	@	5.50
	20 x 28...	10.50	@	10.80

	Tin Boiler Plates.		
IXX, 14 x 26.....	112 sheets.	$12.50 @	$12.75
IXX, 14 x 28.....	112 sheets.....	12.75 @	
IXX, 14 x 31.....	112 sheets	14.25 @	

Copper.

Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

	Ingot.	
Lake		@ 13½¢
"Anchor" Brand.....		@ 12½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, May 23, 1889, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		20	20	20	21	22	23	26	28
30		72	20	20	20	21	23	25	29	....
36	96		20	20	20	22	24	28	30	....
36		96	20	20	21	23	25	29	31	....
48	96		20	20	22	24	26	30	....	....
48		96	20	20	23	25	27	31	....	....
60	96		20	20	25	27	32	....	....	....
60		96	20	21	26	....	....	....	....	....
84	96		21	22	..	....	....	....	....	....
84		96	22	23	....	....	....	....	....	....
Over 84 in. wide			23	25	....	....	....	....	....	....

All Bath Tub Sheets..... 16 oz. 14 oz. 12 oz. 10 oz
Per pound.... ... . $0.23 0.25 0.27 0 30

Bolt Copper, ¾ inch diameter and over, per pound..... 20¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	28¢
12 ounce and up to 14 ounce to square foot.....	24¢
10 ounce and up to 12 ounce.....	26¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢

Tinning sheets on one side, 30 x 60 each ..... 30¢

For tinning boiler sizes, 9 in (sheets 14 in. x 60 in.), each. ..... 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each..... 12¢

Tinning sheets on one side, other sizes, per square foot..... 2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ lb
12 oz. and lighter.....33¢. By the case...32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	35	31	28	27	26	25	22
15	13	36	31	29	28	27	26	23
16	14	37	32	30	29	28	27	23
17	15	38	33	31	30	29	28	24
18	16	40	34	32	30	29	28	25
19	17	41	35	33	32	31	30	27
20	18-19	42	37	35	34	33	32	29
21	20	44	39	37	36	35	34	32
22	21	46	40	38	37	36	35	34
23	22	48	42	40	39	38	37	37
24	23	51	44	42	41	39	38	39
25	24	54	47	44	43	42	41	43

Copper, Bronze and Gilding Tube, 2¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.)

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list.....	25 @ 30 %

Roll and Sheet Brass.

Discount from list. ..... 25 @ 30 %

High Brass Rods.

Over 1 inch diameter..	27¢
¼ inch to 1 inch diameter, both inclusive.....	34¢
No. 8 and less than ¼ inch diameter.....	36¢
Smaller than No. 8.....	30¢
Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.	

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5½¢ @ 6¢
"Bergenport"	.8¢
"Bertha"	7¾ @ 8¢

Zinc.

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks.....	6½¢
Per lb	7½¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

American	4½¢
Newark	4½¢
Bar.....	4¾¢
Pipe, subject to trade discount....	6 ¢
Tin-Lined Pipe, subject to trade discount.....	15¢
Block Tin Pipes, subject to trade discount.....	45¢
Sheet, subject to trade discount.....	6¾¢

Solder.

½ @ ½ (Guaranteed)...	14½¢
Extra Wiping	12½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson.....	₩ lb 16½&17¢
Hallett's.	" 15½&16¢

Fittings.

Cast Iron Fittings, Black and Galvanized.....	75&10 %
Cast Iron Fittings, Bushings and Plugs.....	80 %
Cast Iron Fittings, Flanges.....	75&10 %
Malleable Iron Bushings.....	80 %
Malleable Iron Unions.....	70 %
Malleable Iron American Unions.....	55 %
Malleable Iron Unions, Keystone.....	55 %
Wrought-Iron Nipples....	75&10 %
Wrought-Iron Couplings.....	70 %
Wrought-Iron Long Screws.....	70 %
Casing Fittings.....	60 %
Malleable Iron Fittings.....	40 %

Valves, Cocks, &c.

Iron Body Valves.....	70 %
Throttle Valves, Iron Body.....	70 %
All-Iron Valves.....	65 %
Compression Gauge Cocks.....	60 %
Mississippi Gauge Cocks.....	60 %
Register Gauge Cocks.....	65 %
Air Cocks and Radiator Air Cocks.....	65 %
Steam Gauge Cocks.....	60 %
Oil Cups, Plain, Elbow, new pattern, T and Lever Handle.....	65 %
Globe Oil Cups.....	55 %
Common Lubricators.....	65 %
Lubricators with Air Cocks.....	65 %
Iron Body Lubricators.....	60 %
Steam Whistles.....	65 %
Whistle Valves	65 %
Water Gauges.....	65 %
Brass Expansion Joints.....	55 %
Pump Valves.....	55 %
Soldering Unions.....	65 %
Soldering Nipples.....	70 %
Brass Unions (Union Joints).....	65 %
Radiator Nipples.....	60 %
Fusible Plugs.....	60 %
Oil Pumps.....	55 %
Self-Acting Air Valves.....	65 %
Vacuum Valves.....	55 %
Steam Swing Joints.....	55 %
Iron Strainers.....	55&10 %
Jenkins' Iron Body Valves, except Gate Valves.....	60&10 %
Jenkins' All-Iron Valves, except Gate Valves.....	60 %
Jenkins' Iron Body Gate Valves.....	55 %
Jenkins' All-Iron Gate Valves.....	55 %
Iron Cocks, all Iron.....	65 %
Iron Cocks, with Brass Plugs.....	65 %
Brass Globe, Angle and Cross Valves.....	65 %
Brass Globe Valves, Finished.....	45 %
Brass Globe and Angle Valves, hose outlet.....	65 %
Brass Garden Hose Valves.....	65 %
Brass Caps for Hose Valves.....	60 %
Brass Horizontal, Vertical and Angle Check Valves.....	65 %
Brass Safety Valves.....	65 %
Brass Safety Valves, low pressure.....	65 %
Brass Safety Valves, low pressure, with balance weight.....	65 %
Brass Butterfly Valves.....	55 %
Brass Throttle Valves.....	55 %
Brass Radiator Valves.....	65 %
Brass Radiator Valves, Jenkins'.....	65 %
Brass Jenkins' Globe, Angle, Cross, Corner, Safety and Check Valves.....	65 %
Brass Jenkins' Gate Valves.....	50 %
Brass Steam Cocks.....	60 %
Brass Gas, Meter and Union Meter Cocks.....	60 %
Brass Fittings, Rough.....	60 %
Brass Fittings, Finished.....	25 %
Brass Bushings.....	60 %

Plumbers' Brass Work.

Ground Key Work, Rough.....	60 %
Ground Key Work, Finished.....	55 %
Compression Work.....	60 %
Compression Work, Grundy, Heavy Pattern.....	55 %
Chain Stays.....	60 %
Iron Boiler Couplings, Ground Face, per set $1.....	net
Basin Plugs.....	60 %
Sink or Bath and Wash Tray Plugs.....	60 %
Basin Clamps.....	55 %

FRENCH GLASS.

Per Box 50 feet.

Sizes		Single. 1st.	2d.	3d.	4th.
		E F H	I E H	H H	H B
25	6 x 8 to 10 x 15.....	$10.50	$9.00	$8.50	$8.00
40	11 x 14 to 16 x 24	11.50	10.75	10.25	9.75
50	18 x 22 to 20 x 30.....	15.50	14.00	13.00	12.50
54	15 x 36 to 24 x 30.....	16.50	15.00	13.50	.....
60	26 x 28 to 24 x 36.....	17.75	16.25	14.75	.....
70	26 x 36 to 26 x 44.....	19.00	17.50	15.25	.. ..
80	26 x 46 to 20 x 50.....	21.00	19.50	17.00	.....
84	30 x 52 to 30 x 54.....	22.00	20.25	18.00	.....
90	30 x 56 to 34 x 56.....	23.00	21.25	19.00	....
94	34 x 58 to 34 x 60.....	24.00	22.75	21.00	.....
100	36 x 60 to 40 x 60.....	26.50	24.50	23.00	.....